Navajo Nation Archaeology Department Report No. 91-375

AN ARCHAEOLOGICAL SURVEY FOR THE PROPOSED RECLAMATION OF 11 ABANDONED URANIUM MINES IN CAMERON, COCONINO COUNTY, ARIZONA

(NNAD-91-375)
(CAMERON NAMLRD PROJECT 2)

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Abstract

1. AGENCY: Navajo Nation Historic Preservation Department

2. PROJECT TITLE: An Archaeological Survey for the Proposed Reclamation of Eleven Abandoned Uranium Mines Around Cameron, Coconino County, Arizona.

3. PROJECT NUMBER: NNAD-91-375 (Cameron AML Project 2)

4. PROJECT DESCRIPTION: Navajo Abandoned Mine Lands Reclamation Department (NAMLRD) proposes to reclaim eleven project areas identified by them as hazards to public health and safety. These proposed reclamation areas contain open mine pits up to 50 feet deep, associated waste rock, and small piles of protore. Heavy equipment (bulldozers, scrapers, etc.) will be used to put the protore and waste rock back into mine pits at each of the eleven project areas.

5. LOCATION: The project area is in Cameron, Coconino County, Arizona within the Cameron Chapter of the Tuba City Agency. All of the areas are located on Navajo Tribal Trust land. The township and range includes: T28N, T29N, R9E, R10E, and R11E. For those areas which are unplatted, the projected township and range is T29N, R10E of the Gila and Salt River meridian. USGS 7.5 minute maps are Cameron North, Ariz. 1988 Provisional Edition, Cameron NE, Ariz. 1988 Provisional Edition, Cameron South, Ariz. 1988 Provisional Edition, and Cameron SE, Ariz. 1988 Provisional Edition.

6. NUMBER OF SURVEYED ACRES: 176.02 acres (71.11 hectares)

7. NUMBER OF SITES: Eleven Historic Sites (NAMLRD #'s: 27, 28, 29, 30, 35, 36, 38, 39, 49, 53, & 54)

8. NUMBER OF ELIGIBLE SITES: None

9. LISTING ELIGIBLE SITES: N/A

10. COMMENTS: None

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INTRODUCTION

"The good Earth had plenty to give, but the traditions said it shouldn't be taken recklessly. Now they were taking it [uranium] by force. Many of the old [Navajo] people...had said that it would have a bad ending. For the Earth is sacred and needed its various parts intact to function as a provider for the human race, and all life" (Clark 1988:19). This project is a beginning step in the reclamation of uranium mines that have been left open for at least 30 years in Cameron, Arizona.

In the western part of the Painted Desert on Navajo Tribal Land around Cameron, Coconino County, Arizona (Figure 1), an extensive area of scattered uranium deposits exists in the lower members of the Chinle Formation (Figures 2, 3a,and 3b), which includes "(in ascending order) the Shinarump, sandstone and siltstone, Petrified Forest, and Owl Rock Members" (Scarborough 1981:32). The uranium deposits of this area were prospected and mined during the 'uranium boom' of the 1950s and early 1960s. Rather intensive ore exploration and exploitation has left a legacy of landscape scars, radioactive protore (low grade ore, stock-piled for future use) piles, and potentially dangerous ponds. Open mining pits, some several acres in size, dot the barren landscape of the Painted Desert north and east of Cameron. Water impounded in some of the pits creates murky pools used by livestock for drinking and at times by local children for swimming. Contamination of groundwater or the Little Colorado River by radioactive minerals poses an undetermined environmental risk.

In an effort to mitigate real and potential health and safety hazards, and abate the most severe and extensive surface disturbances, the Abandoned Mine Lands Reclamation Department (NAMLRD), Navajo Nation Division of Natural Resources, is proposing to reclaim many of the old uranium mines in the

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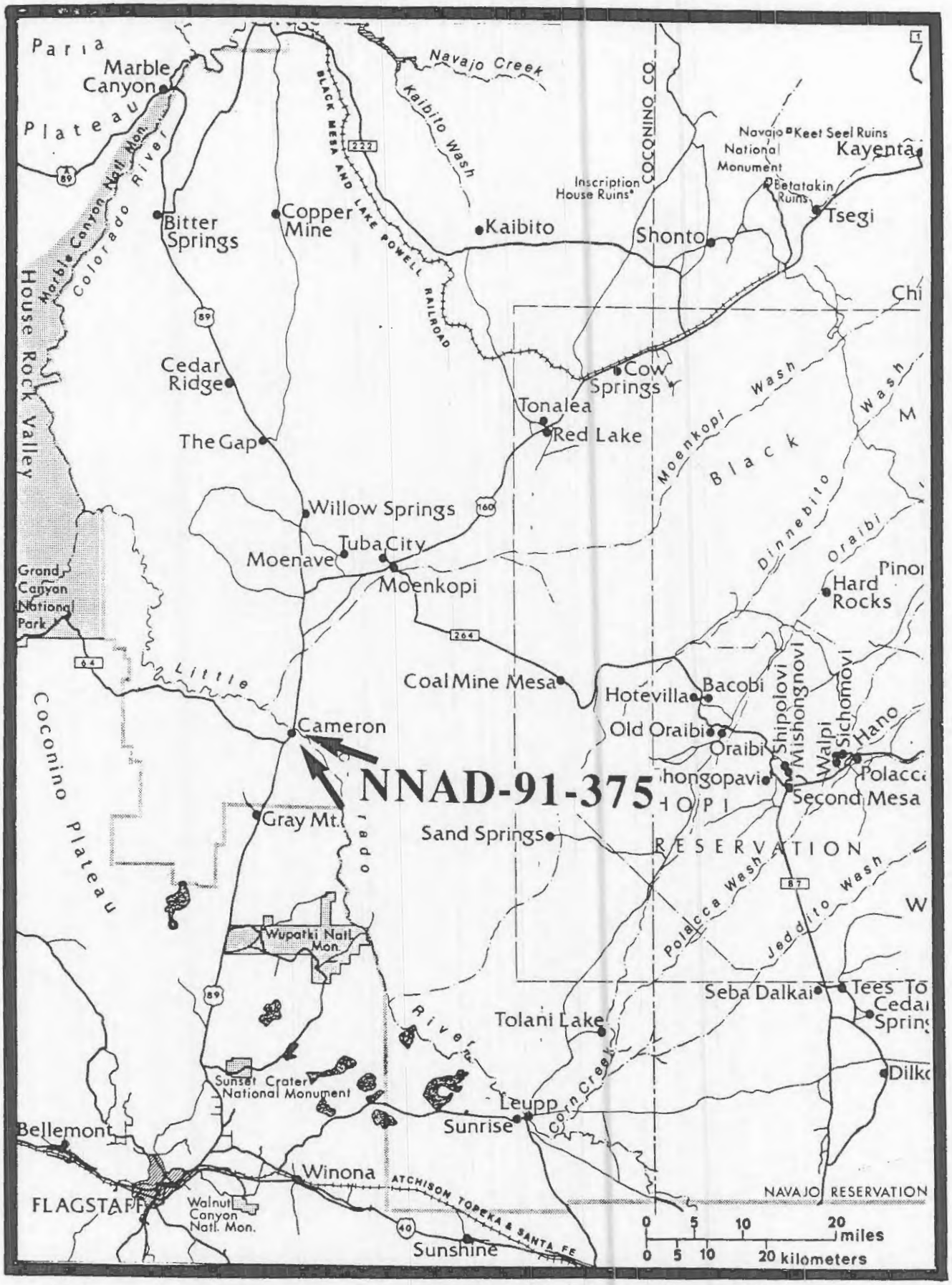


Figure 1. General Location of NNAD-91-375 (From Goodman, 1982).

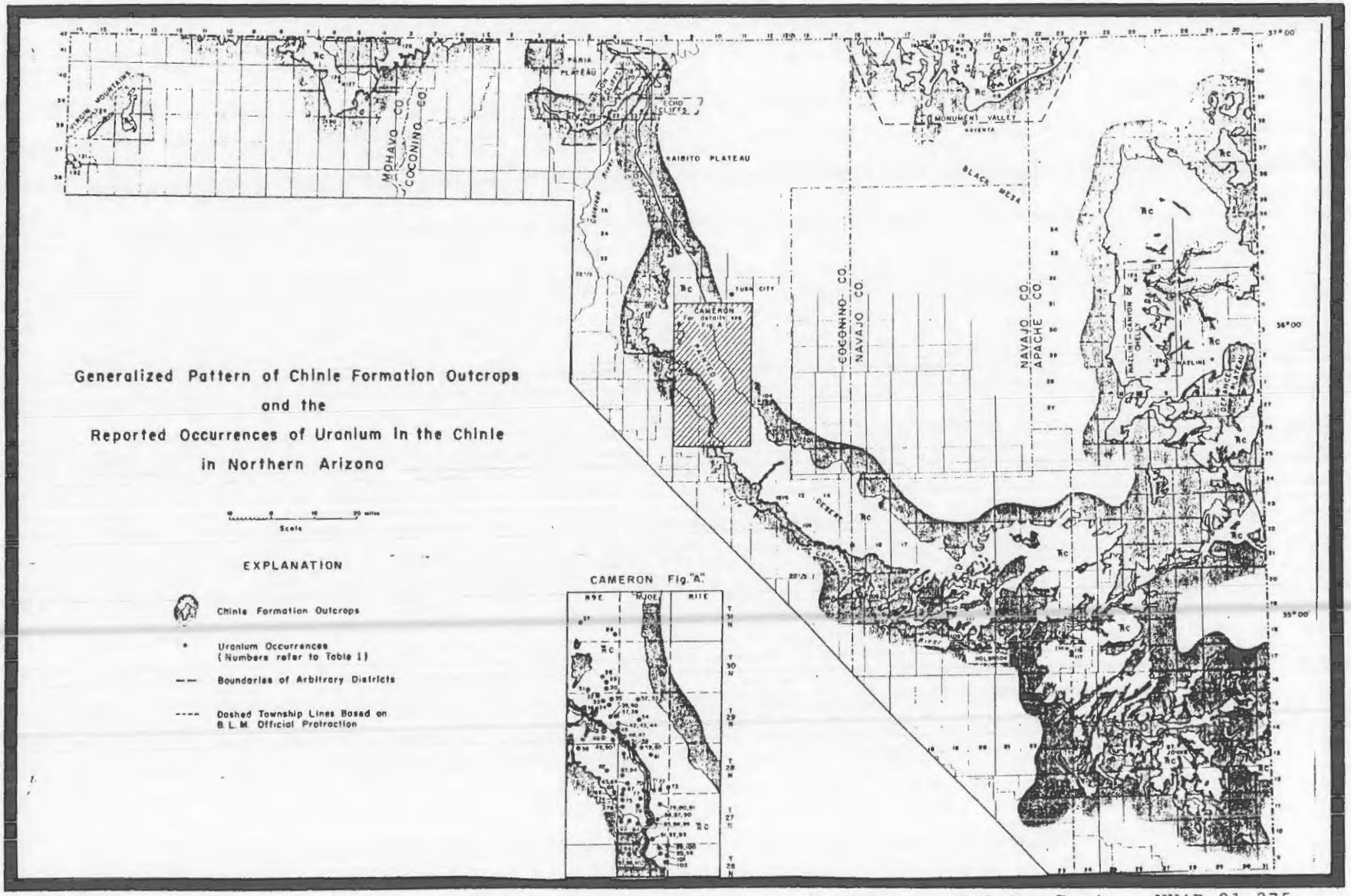


Figure 2. Geologic Map Illustrating Uranium Occurrences in the Cameron, Arizona Region, NNAD-91-375.

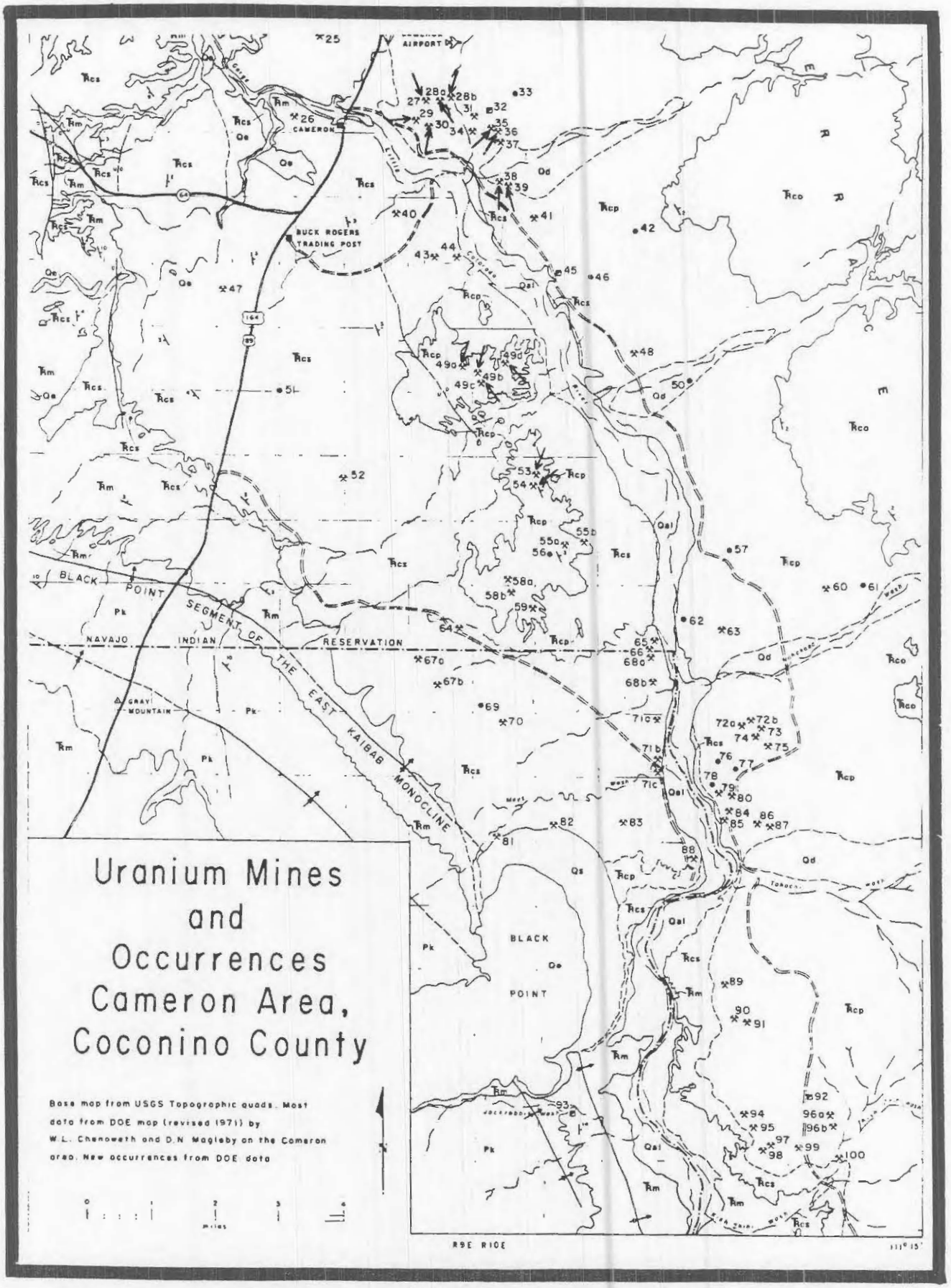


Figure 3a. Topographic Map Illustrating the Location of Uranium Mines and Occurrences in the Cameron, Ariz. Region (Based on Cameron, AZ 15' Quad.

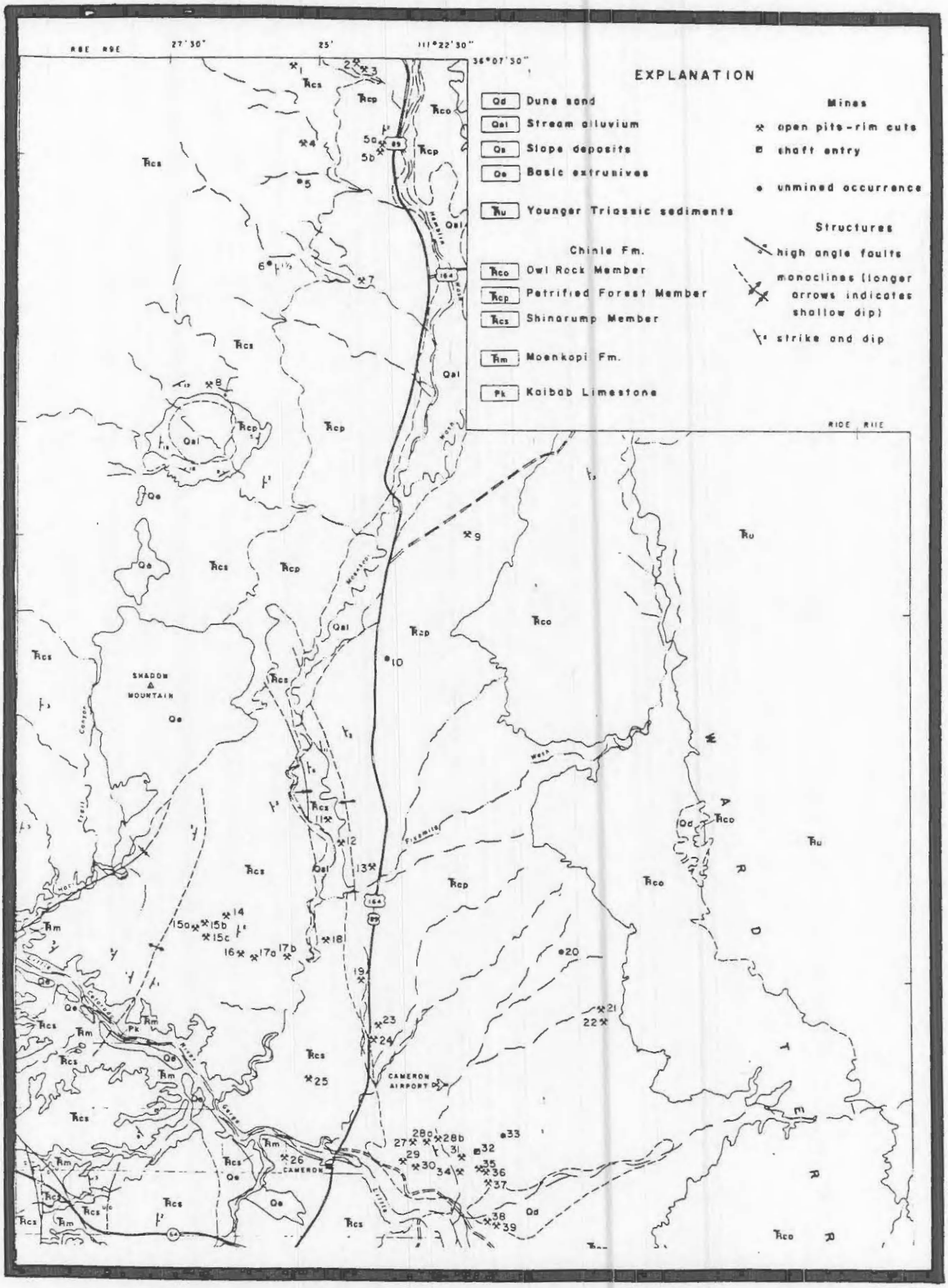


Figure 3b. Topographic Map Illustrating the Location of Uranium Mines and Occurrences in the Cameron, Ariz. Region (Based on Cameron, Ariz. 15' Quad).

Cameron area. The second phase of this project involves the reclamation of eleven project areas; other mines will be reclaimed as funds become available. As part of its effort to comply with federal and tribal legislation, NAMLRD requested that the Navajo Nation Archaeology Department at Northern Arizona University (NNAD-NAU) conduct an archaeological survey of the 11 project areas prior to initiating any ground disturbing activity. John O'Brien, NAMLRD Mining Engineer, took Miranda Warburton, NNAD Archaeologist, on a preliminary inspection of the eleven project areas in early November of 1991.

The archaeological survey was conducted by Miranda Warburton and Davina Begaye with the assistance of Nathan Lefthand of NNAD's Northern Arizona University Branch Office (NNAD-NAU) on November 13 & 21, December 17, 1991, and January 22, 1992. NAMLRD funded this study and provided detailed topographic maps for all project areas or uranium mines and some historic documentation.

In addition to the archaeological survey, several individuals were interviewed about their participation in, or knowledge of, mining operations at Cameron, Arizona. This ethnohistorical inquiry was conducted by Grace Morgan of NNAD-NAU.

PROJECT DESCRIPTION

NAMLRD proposes to reclaim eleven project areas identified by them as hazards to public health and safety. These proposed reclamation areas may contain open mine pits up to 50 feet deep, associated waste rock, and small piles of protore. Heavy equipment (bulldozers, scrapers, etc.) will be used to put the protore and waste rock back into mine pits at each of the eleven project areas. All project areas are accessed by existing roads that require little or no improvement.

The eleven project areas of the proposed Cameron reclamation program are listed in Table 1 while Figures 4a, 4b, 4c, 4d, and 4e show the specific location of these areas on USGS topographic quadrangles. The size of the eleven project areas vary from 1.59 acres to 46.38 acres. The total area of effect and area surveyed for the proposed project areas is 176.02 acres (71.11 hectares). This acreage figure is based on NAMLRD calculations.

LOCATION

The eleven project areas (PAs) of the Cameron reclamation program are located in the Cameron Chapter, Tuba City Agency, of the Navajo Nation, Coconino County, Arizona (Figures 1 and 2). All of the eleven project areas are located on Navajo Tribal Trust land.

Parts of this region have not been included in a government survey, but the projected township and range is T29N, R9E & R10E, while the unprojected township and range is T28N, R9E & R10E, of the Gila and Salt River meridian. Specific locations of the project areas are shown in Figures 4a-4e on USGS 7.5 minute topographic quadrangles *Cameron North, Arizona*, 1988 provisional edition, *Cameron NE, Arizona* 1988 provisional edition, *Cameron South, Arizona*, 1988 provisional edition, and *Cameron SE, Arizona*, 1988 provisional edition. Table 1 gives the UTM coordinates for the corner points (CPs) and approximate centers of the eleven project areas.

ENVIRONMENTAL AND CULTURAL SETTING

The Painted Desert extends along the Little Colorado River from Holbrook north and west to Tuba City. It covers a broad arc across the southwestern portion of the Navajo Reservation from The Gap at the base of the Echo Cliffs to around Chambers east of Petrified Forest National Park. The Painted Desert is essentially a vast expanse of colorful Triassic Period silt- and mudstone

Table 1. Size, NNAD Site Numbers, and UTM Coordinates (Zone 12) for the eleven NAMLRD Projects, NNAD-91-375.

NAMLRD Area	Project Area Name	Size (acres)	UTM Coordinates	
27	Max Johnson No. 1 (NNAD-AZ-N-5-4)	10.24	Center:	3970520N 464750E
			CP1:	3970390N 464680E
			CP2:	3970530N 464640E
			CP3:	3970670N 464770E
			CP4:	3970660N 464840E
			CP5:	3970510N 464860E
			CP6:	3970380N 464770E
28	Lemuel Littleman No. 2 (NNAD-AZ-N-5-5)	3.06	A Center:	3970560N 464950E
			CP7:	3970500N 464880E
			CP8:	3970680N 464920E
			CP9:	3970590N 465090E
			CP10	3970480N 464920E
		10.95	B Center:	3970440N 465300E
			CP11:	3970380N 465270E
			CP12:	3970580N 465280E
			CP13:	3970520N 465360E
			CP14:	3970460N 465400E
			CP15:	3970340N 465340E
29	Charles Huskon No. 1 (NNAD-AZ-N-5-6)	14.59	Center:	3970200N 465620E
			CP16:	3970040N 465510E
			CP17:	3970240N 465520E
			CP18:	3970300N 465560E
			CP19:	3970350N 465700E
			CP20:	3970240N 465740E
			CP21:	3970100N 465720E
30	Max Johnson No. 10 (NNAD-AZ-N-5-7)	1.59	Center:	3969960N 464760E
			CP22:	3969880N 464780E
			CP23:	3969940N 464710E
			CP24:	3969980N 464730E
			CP25:	3969980N 464820E
35	Evans Huskon No. 2 (NNAD-AZ-N-11-3)	4.56	Center:	3969740N 466200E
			CP26:	3969620N 466160E
			CP27:	3969790N 466100E
			CP28:	3969840N 466180E
			CP29:	3969760N 466370E
36	Yazzie No. 101: (NNAD-AZ-N-6-1)	19.51	Center:	3969960N 466520E
			CP30:	3969780N 466480E
			CP31:	3970060N 466310E
			CP32:	3970080N 466580E
			CP33:	3970020N 466660E
			CP34:	3969840N 466660E

Continuation of Table 1., NNAD-91-375.

NAMLRD Area	Project Area Name	Size (acres)	UTM Coordinates
38	Boyd Tisi No. 2 (NNAD-AZ-N-11-4)	6.36	Center: 3968620N 466720E CP35: 3968480N 466720E CP36: 3968580N 466570E CP37: 3968720N 466760E CP38: 3968700N 466840E
39	Juan Horse No. 3 (NNAD-AZ-N-11-5)	18.16	Center: 3968490N 466930E CP39: 3968300N 467000E CP40: 3968480N 466760E CP41: 3968700N 466860E CP42: 3968470N 467100E
49	Charles Huskon No. 3 (NNAD-AZ-N-12-8)	15.37	A Center: 3963970N 465970E CP43: 3963780N 465890E CP44: 3963880N 465860E CP45: 3964180N 465880E CP46: 3964170N 466090E CP47: 3963760N 466060E
		5.39	B Center: 3963830N 466310E CP48: 3963740N 466260E CP49: 3963800N 466250E CP50: 3963880N 466240E CP51: 3963940N 466340E CP52: 3963800N 466420E
		3.96	C Center: 3963610N 466300E CP53: 3963520N 466250E CP54: 3963380N 466220E CP55: 3963680N 466320E CP56: 3963570N 466340E
		46.38	D Center: 3964150N 466980E CP57: 3963800N 466660E CP58: 3964320N 466820E CP59: 3964390N 467100E CP60: 3964170N 467280E CP61: 3963960N 467060E
53	Charles Huskon No. 7 (NNAD-AZ-11-9)	9.99	Center: 3961300N 467620E CP62: 3961180N 467540E CP63: 3961360N 467550E CP64: 3961460N 467580E CP65: 3961430N 467680E CP66: 3961280N 467710E CP67: 3961170N 467700E
54	Yazzie No. 102 (NNAD-AZ-N-11-10)	5.91	Center: 3961100N 467530E CP68: 3961000N 467450E CP69: 3961200N 467470E CP70: 3961150N 467600E CP71: 3961100N 467600E CP72: 3961040N 467580E

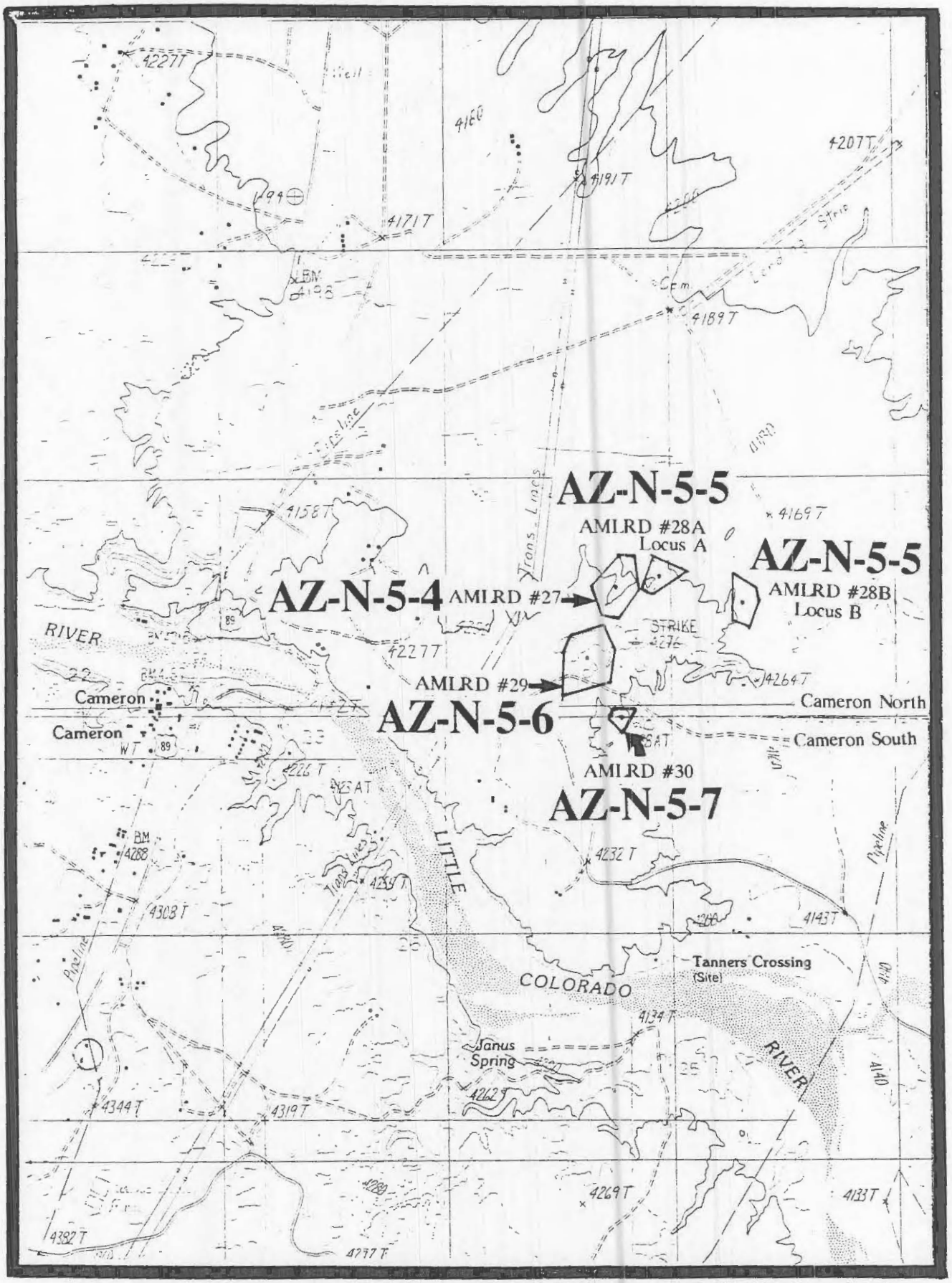


Figure 4a. USGS 7.5' Cameron North, Ariz. 1988 Provisional Edition Showing Location of NNAD AZ-N-5-4, AZ-N-5-5 Locus A & B, AZ-N-5-6, AZ-N-5-7 (AMLRD #s 27, 28, 29, 30).

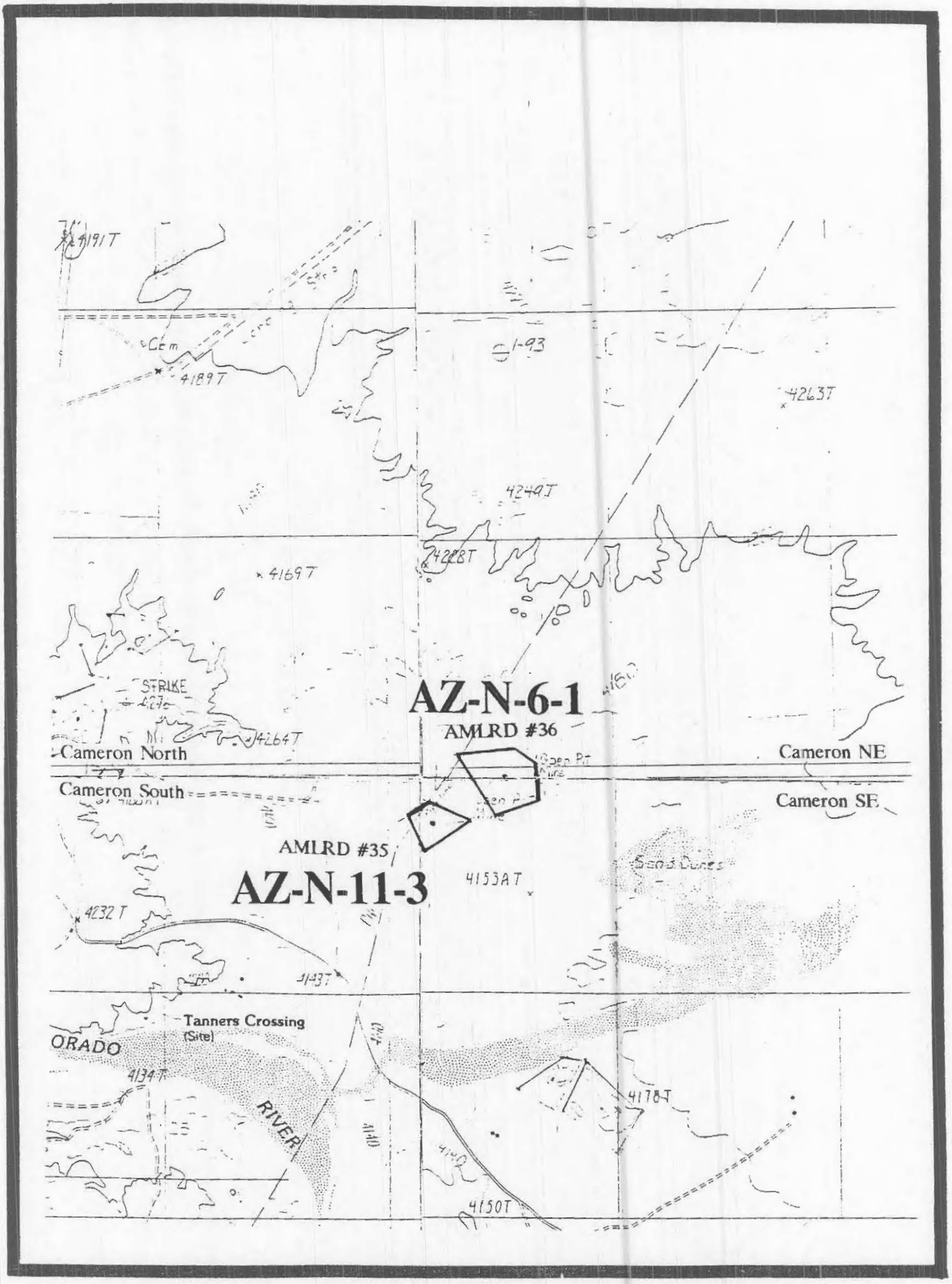


Figure 4b. USGS 7.5' Cameron South, Ariz. 1988 Provisional Edition Showing Location of NNAD AZ-N-11-3, AZ-N-6-1 (AMLRD #s 35, 36).

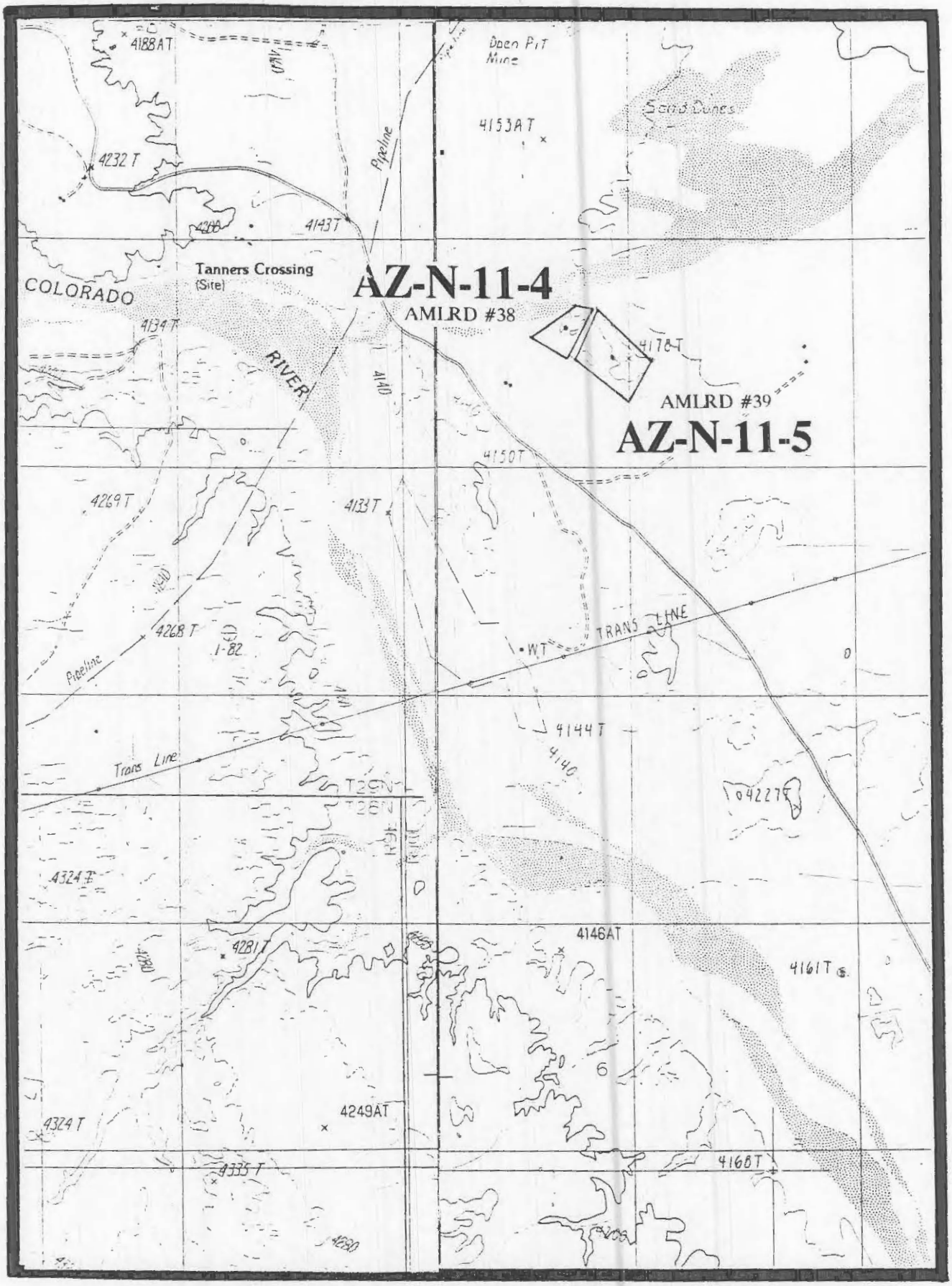


Figure 4c. USGS 7.5' Cameron South, Ariz. 1988 Provisional Edition Showing Location of NNAD AZ-N-11-4, AZ-N-11-5 (AMLRD #s 38, 39).

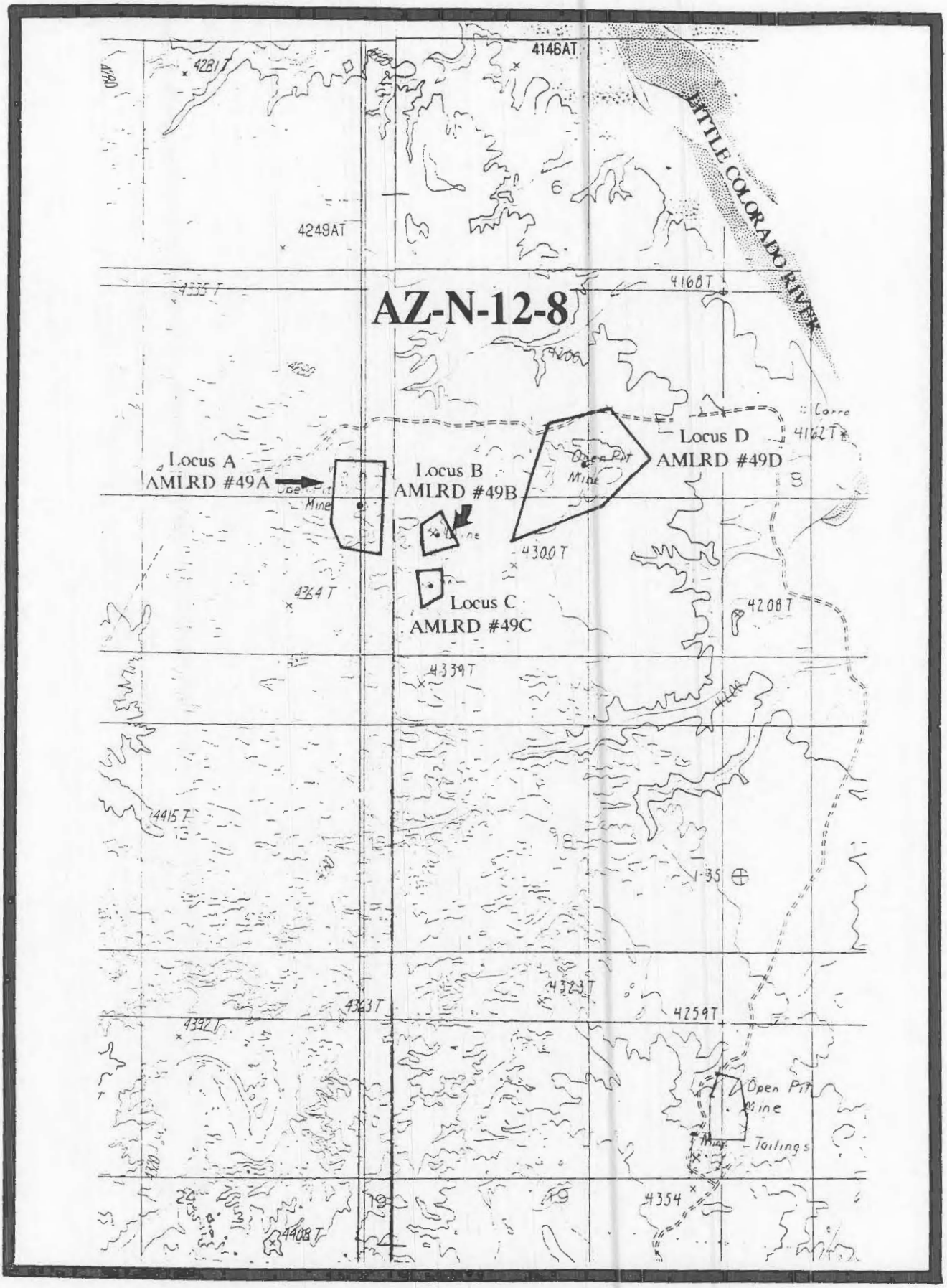


Figure 4d. USGS 7.5' Cameron SE, Ariz. 1988 Provisional Edition Showing Location of NNAD AZ-N-12-8 Locus A-D (AMLRD #49).

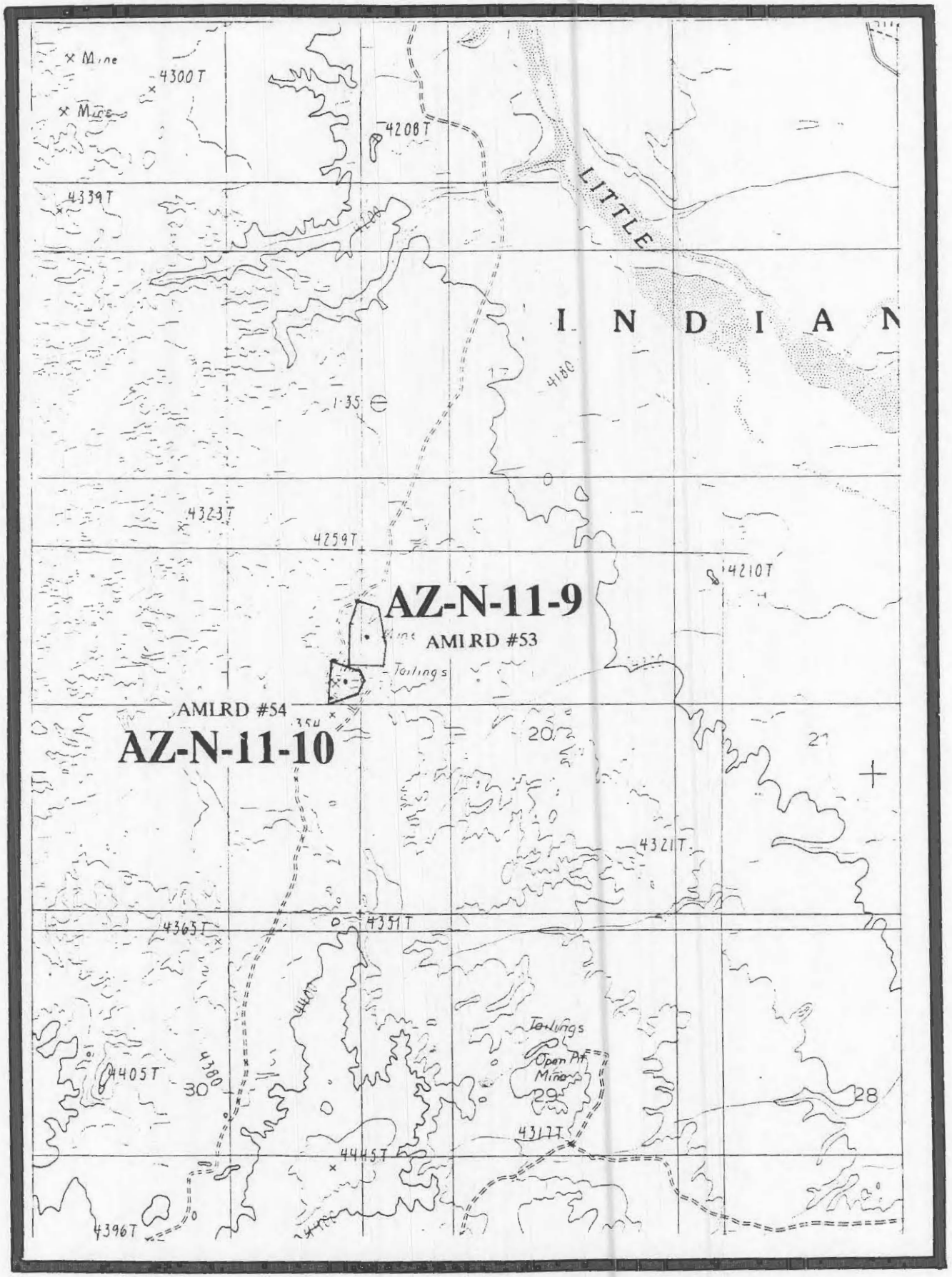


Figure 4e. USGS 7.5' Cameron SE, Ariz. 1988 Provisional Edition Showing Location of NNAD AZ-N-11-9, AZ-N-11-10 (AMLRD #s 53, 54).

intricately dissected and eroded to form badlands and low scarps. The Chinle Formation is the principal geologic unit exposed in the Painted Desert, and it is from this formation that uranium was mined.

This project area is located in the northwestern portion of the Painted Desert, and north, northeast, south and southeast of Cameron, Arizona. It is drained by Hamblin and Moenkopi Washes and the Little Colorado River. In this area the resistant sandstone and conglomerate of the Shinarump Member and silt- and mudstone of the Petrified Forest Member are exposed; the former as ledges, scarps, and bedrock surfaces, the latter as badlands. Sediments for the area are either residual or fluvial and vary with the parent material; they range from clay to cobbles, Tolchaco gravels, and are most often poorly sorted.

The project areas range in elevation from a low 4,041 feet (1,231.7m) for an area located north of the Little Colorado River to a high of 4,338 feet (1,322.3m) for an area south of the Little Colorado River. The plant community is Great Basin Desertscrub and consists of prickly pear, rabbitbrush, snakeweed, yucca, Russian thistle, Mormon Tea, groundsel, camel thorn, sparse grasses, and tamarisk. Animal life is limited in number and kind, and these days the most visible animals of the area are domestic livestock. Besides the Little Colorado River, surface water is in short supply.

PREVIOUS RESEARCH AND CULTURE HISTORY

No extensive archaeological research has been conducted in the vicinity of the reclamation project areas. Small scale surveys have been conducted around Cameron in advance of developments--roads, water lines, power lines,

gravel pits and the like--but these have shed little light on the culture history of the area. For an overview of this area, perhaps the most significant work conducted in the general region around Cameron includes the Wupatki Survey (Anderson 1990), excavations at the New Leba 17 site (Breternitz and Schley 1962), excavations along the Four Corners Pipeline (Brugge, Bliss, and Crabtree n.d.), and the excavation of Ariz. I:3:1 along the Black Mesa Pipeline (Ward 1976).

A check of site and project files at NNHPD and NNAD revealed that three projects have been previously undertaken and three sites were recorded within one kilometer of the project areas. Please see Table 2 for a description of each site.

FIELD METHODS

In early November, 1991, Miranda Warburton, Office Manager of NNAD-NAU.of NNAD-NAU, was taken to each of the eleven project areas by NAMLRD Mining Engineer John O'Brien. O'Brien explained the nature of the proposed undertaking in detail. Field work was conducted November 13 & 14, 1991, December 17, 1991, and January 22, 1992 by Davina Begaye, Nathan Lefthand, and Miranda Warburton.

The Cameron Chapter was informed about "Cameron Phase 1," as well as "Cameron Phase 2" by delivering maps and a letter to Ace Charles (President) and Howard Dugi (Manager) explaining the size and scope of the project. Both men were also consulted as to the existence of TCPs within the proposed project area. They suggested that the local residents of Cameron be interviewed, a long process completed by Grace Morgan of NNAD-NAU. A description of the proposed reclamation along with associated maps was also posted at the Cameron Chapter for the convenience of the community.

Table 2. Projects Undertaken and Sites Recorded within a 1km Radius of the Eleven Project Areas for NNAD-91-375.

Project NAMLRD# & USGS 7.5'Series Quad	Project Number & Site Number	Description
27 Cameron North 1988	NONE	N/A
28A & B Cameron North 1988	NONE	N/A
29 Cameron North 1988	NONE	N/A
30 Cameron North 1988	NONE	N/A
35 Cameron NE 1988	NONE	N/A
36 Cameron NE 1988	NONE	N/A
38 Cameron SE 1988	NNAD-91-17 AZ-N-11-1	Historic (1950s-1960s) Uranium ore open pit mine with associated historic trash.
	MNA 86-335/NAU-86-190 NA7389	Kayenta Anasazi site ca. A.D.1070 to 1180.
39 Cameron SE 1988	MNA-78-273/A-78-147 NA1656	Pueblo III (Ca. A.D. 1200) small habitation cluster.
49A,B,C, & D Cameron SE 1988, Cameron South 1988	NONE	N/A
53 Cameron SE 1988	NONE	N/A
54 Cameron SE 1988	NONE	N/A

Grace Morgan of NNAD-NAU traveled throughout Cameron, Arizona inquiring about the existence of Traditional Cultural Properties or TCPs (grave sites, and sacred, ceremonial or plant gathering areas), as well as conducting an ethnographic research of the effect that the uranium mines have had on the Navajo people. In her interviews she would explain that the uranium mines were in the process of being reclaimed after all these years and, that it was her duty to inquire about the existence of Traditional Cultural Properties (TCPs) in and around the uranium mines.

Grace Morgan proceeded to visit homes located near the uranium mines to conduct her interviews throughout the summer of 1991. The results of her interviews will apply to future NAMLRD reclamation projects, since Morgan visited most homes next to uranium mines in general. A total of fifty-one residences and a Nazarene Church were visited. Only eighteen actual interviews were conducted with all but three conducted in Navajo. Further information concerning Morgan's interviews is discussed later under the heading "SACRED PLACES."

The goal of reclaiming abandoned mines virtually insures that cultural resources will be encountered, since every project area proposed for reclamation is perforce an archaeological site. The eleven project areas qualify as sites because they contain evidence of historic mining. Since each of the reclamation project areas is centered on some form of significant prospecting or mining feature or features, the fieldwork was essentially one of documentation rather than survey per se. The boundaries of each of the eleven reclamation projects staked by NAMLRD were treated as the boundaries for the fifteen archaeological mine sites. Fieldwork consisted of mapping and recording all remains contained within these boundaries.

NAMLRD produced detailed topographic maps for each of the eleven project areas. These were used to locate features and other finds and served as base maps for the preparation of site maps. During the mapping and recording process the entire surface of each project area was inspected, or in effect surveyed. The project areas included mine pits and trenched areas both associated with waste rock and/or protore piles. Notes were taken in the field and later incorporated onto NNAD site forms.

An important source of information about the mining activity in the area came from geologic and mine inspector reports. These were used to abstract a general history of uranium mining in the region and how specific mines were operated. This information is included in the site forms in Appendix A, and below in the Cultural Resource Findings section.

CULTURAL RESOURCE FINDINGS

Sites

The only archaeological sites documented during this survey are the eleven reclamation project areas. The only remains of cultural activity that were observed were from mining and later use of the mine pits as land fills, alcohol related drinking areas for people, and watering areas for livestock.

Research was conducted on the history of the 11 project areas. Reports written during and after the late 1950s and early 60s of the Uranium boom were consulted for information regarding the fifteen mine sites. However,

> Little information has been published concerning working conditions in the mines on the Navajo Reservation. Limited surveys by the Public Health Service and other agencies have documented exposures to radon gas and silica dust (Samet 1984:1).

The actual physical damage that the Cameron uranium miners and the community have suffered from the mines which have been left open for at least 30 years is undetermined.

Uranium mining commenced in and around Cameron, Arizona with the discovery of uranium in 1949 at Lee's Ferry in the Vermillion cliffs district (Tuck 1963:46), and in 1950 by Hosteen Nez, Navajo, who discovered uranium on Ward Terrace (Scarborough 1981:31). Later discoveries by "surface prospecting and surface and airborne radiometric surveys" followed soon after. In 1952, Charlie Huskon, a Navajo man from Cameron, Arizona, made the "first discovery of commercial importance." Although the northeastern corner of Arizona produced prime uranium, "As of 1959 the best Uranium deposits found in Arizona in the Chinle Formation were in the Cameron District" (Payne 1986:1, 2).

The Arrowhead Uranium Company was the lessee and was responsible for mining operations at this time. Later, Cameron uranium was mined by a number of private parties and companies. Uranium ore was at first shipped to Monticello, Utah, then to the Blue Water Mill in New Mexico, but by 1956 was directed to the new uranium ore processing plant constructed by the Rare Metals Corporation of America, in Tuba City, Arizona on the Navajo Reservation. "In early operations, about 300 tons of ore per day were processed using an acid leach, sand-slime separation and resin-in-pulp ion exchange process." Overall, this mill "processed 800,000 tons of ore with average grade of 0.33% U_3O_8 and produced 2,348 tons of U_3O_8 in concentrate form" until 1966 (Scarborough 1981:280, 281).

In Coconino County, which includes Cameron, Arizona, uranium ore production from 1958-1959 totalled 83 tons and was valued at $2,234 in 1958 and $1,756 in 1959 (Knight 1961:22). Sixty-seven mines in the Cameron area

produced 1,177,500 lbs. of U_3O_8 from the Petrified Forest Member, while a remaining twenty-seven mines in the "underlying sandstone and siltstone member account for 62,500 lbs. of U_3O_8." From 1954-1963 a total of 292,415 tons of an average of 0.21% U_3O_8 was mined from the lower part of the Chinle Formation of the Triassic age thus, establishing "the Cameron region [as] the 4th largest uranium production district in Arizona" (Scarborough 1981:31, 32).

The federal government's Atomic Energy Commission, was the only purchaser, and consequently operator of a buying station in Cameron, Arizona until 1962. The demand for uranium slowed during the 1960s. In 1962 mining ceased throughout Cameron, Arizona, and "at least 45 open-pit mines and their adjacent tailings piles" were left open to the Navajo public and their livestock for the next thirty years (Schwennesen 1989:2-1).

As one reads through the reports and examinations written and compiled during this time, a few generalities of uranium mining in Cameron, Arizona can be made. Chas M. McConnell of the USGS Branch of Mines and R. C. Derzay, a Mining Health and Safety Engineer, reported regularly on the activities and progress of most, if not all, of the uranium mines in Cameron.

McConnell commented on the progress of mines, thus, covering the quantity of ore mined, procedure, equipment, and number of men involved with uranium mining in the '50s and '60s. "Mining was done by open pit methods, except for a few shafts and adits from the bottoms of several pits" (Payne 1986:2). The following passage describes the actual procedure of mining involved with the eleven project areas:

> Open pit stripping method...was accomplished by drilling and blasting of thicker ore bodies and hand loading of thinner and isolated ore bodies. Drilling was by both portable auger type drills and by jack hammers. Thin areas of ore were broken out by use of pneumate concrete breakers. Ore was stockpiled close to the mines by mobile loaders and wheel-barrows...[Mostly Navajo]

> operate the mobile loaders, drills, and do the hand mining. The men work 5 1/2 days a week on a single shift basis and produce about 3,000 tons a month (McConnell April 9, 1958:1). A typical shift for a miner in the pit would include drilling, hand picking ore and shoveling, each task of about equal duration throughout the shift (Derzay Feb. 18-19,1959:1).

White men managed and supervised the mines, and they were the only people qualified to handle the explosives. Economic constraints limited the pits to a "stripping ratio of 13 feet of waste for 1 foot of ore. Exploratory drilling was correspondingly limited to about 140 feet in depth" (Payne 1986:2).

> Usually, the crew of Navajo laborers numbered no more than 30 men. AEC-BIA negotiations in 1949-50 at Window rock allowed for the hiring of local Navajo uranium prospectors...Charlie Huskon, a Cameron resident became such a prospector and located a number of Chinle formation occurrences in 1951. Mining permits given to him by the Navajo Tribe were used for mining the Huskon orebodies by the Arrowhead Mining Company of Grand Junction, Colorado. The Navajo prospector program was more successful at Cameron than at any other region on the reservation (Scarborough 1981:280).

Actual written and published ethnographic studies concerning Navajo miners in the Cameron area, are as of today nonexistent.

R. C. Derzay, a Mining Health and Safety Engineer, was required by law to identify and correct all hazards at the Cameron Uranium mines in Arizona through written reports. His observations and recommendations hardly varied. Exposure to radiation was of a minor concern in most of his reports, since the radiation level was reportedly very low.

> A gamma ray survey...using a nuclear Geiger counter calibrated with a cobalt 60 source, indicated gamma radiation levels to be low. Maximum intensities measured were 0.1 and 0.15 milliroentgens per hour as compared with 6.0 milliroentgens per hour permissible exposure rate based on a 13 week, 40 hours per week accumulative maximum dosage of 3125 milliroentgens (Derzay Feb. 18 & 19, 1959:4).

Radioactive dust caused by the mining of uranium was also of minor concern, although the crew men were not to work during severe dust storms. In general, dust produced by uranium mining is contaminated by radon daughters, which decay from radioactive radon gas. If inhaled for long periods of time, it is highly possible that one could develop cancer, as was the case in the Shiprock, New Mexico underground uranium mines.

> Excess mortality from lung cancer has been demonstrated in Navajo men who mined uranium in this region. A follow-up study of 780 American Indian miners, primarily Navajos, showed 11 deaths from respiratory cancer through 1974, with only 2.6 expected. Among 17 Navajo men with lung cancer who were admitted to the Shiprock Hospital between 1965 and 1979, 16 had mined uranium (Samet 1984:1481).

Radon daughters in the open-pit mines of Cameron, Arizona were reportedly "so low as to be unmeasurable." In Derzay's report, he states the accepted belief of the hazard, or lack thereof, of contaminated uranium mine dust in Cameron, Arizona. "It was believed the shale and clay tended to cushion the sand grains thus minimizing the forming of fine dust." It was also stated in his reports that the roads were often sprinkled with water to further minimize the risk of inhaling contaminated dust (Derzay Feb. 18 & 19, 1959:4). Documentation is not available on the possible physical effects, if any, suffered by the Navajo miners in the Cameron, Arizona vicinity

Derzay in almost every report recommended that the crew men were to be encouraged to wear safety gear provided for them. However, based on his examinations the men chose not to do so. The recommended safety gear included: safety toe shoes, glasses or goggles, respirators (during windy days) and hard hats. Whether or not they were actually debriefed on the hazards of uranium mining is not known.

AZ-N-5-4 (Figure 5)

AML Project Area: 27

Mining Claim: Max Johnson No. 1 (Mining Permit No. 224)

Site Type: Uranium ore open pit mine

USGS Map Reference: Cameron North, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates:

CP1: 3970390N 464680E

CP2: 3970530N 464640E

CP3: 3970670N 464770E

CP4: 3970660N 464840E

CP5: 3970510N 464860E

CP6: 3970380N 464770E

Site Size: ca. 288m N-S x 210m E-W; 60,480 sq m

Site Description: This site consists of a long relatively shallow open pit mine in the Petrified Forest Member of the Chinle Formation. The cut is oriented NE-S, and exhibits an opening toward the north, which was the ramp access into the pit. The pit measures about 171.5m long x 51.8m at its widest, and up to 3.7m deep. Water is ponded here for parts of the year, and is a source of water for local livestock. An eroded pile of waste rock and/or protore borders the northwestern edge of the pit and rises about 1.8m above the ground surface, while small piles of waste rock and/or protore dot the southeastern edge of the pit and rise about 0.9m above the ground surface.

Concentrated historic trash scatters, a result of mining operations, are located at the beginning of the access road north of the pit (F1), and immediately west (F2) of the access road before it enters the pit. The most northern historic trash scatter, F1, covers an area roughly 5m E-W x 15m N-S

and includes a church-key opened oil can, 12+ food cans, a 1 gal. gas can, a glass bottle, a piece of rubber hosing, 15+ big pieces of various machine and engine parts, and soda bottles ("Dr. Pepper" and "7-Up"). F2, which lies immediately west of the access road before entering the pit, exhibits another activity area associated with the mine and includes the following artifacts: a couple of window frames for a car and/or truck, clear broken glass pieces (some from wine bottles), a soda bottle ("Hines"), 27+ food/liquid (sardines, juice) cans, pieces of a Euro-American bowl with flowers painted on it, an oil filter, a carburetor, 10+ machine and engine parts, 4+ rusted rods, 15cm-50cm in length, and one whole glass bottle. Most of the cans are squashed flat and are rusted. Both trash scatters appear to have been areas for lunch and for mechanics to work on their machinery.

In general historic trash can be found all around this mine pit as well as modern trash. Historic trash observed in and around the mine pit included: 6+ rusted food/juice cans, 2+ machine and engine parts, 6+ 1 gal.gas cans, a 5 gal. gas can, 6+ bimetal Budwieser cans, a bullet ("Western 38 Special"), cable wire, a rusted can ("RHEEM MFGH, MADE IN U.S.A., ON THE, PACIFIC COAST, 24 5 48, ICC-60-20, STP, PATENTED JUNE 1923"), and a shovel rod.

Modern trash represents the use of this uranium mine pit today as a "party" area for Cameron residents. It has become the perfect rendezvous for socializing in the form of alcoholic drinking. Thus, the predominant modern trash recorded was at least 90+ beer cans ("Budwieser", "Coors", are predominant), shattered glass liquor bottles, and seven 12 pack cardboard beer cartons. Six soda cans, a couple of plastic bags, 2+ Pennzoil bottles, scattered styrofoam, 3+ oil cans, a 5 gal. plastic bucket, and a bullet make up the remaining observed modern trash.

Max Johnson No.1, based on records provided by NAMLRD, produced 5,678 tons of uranium ore during the period of 1956-57, and 1959-60, and was mined by the Utah Southern Oil Company. Several reports were written by Chas M. McConnell concerning the progress of NAMLRD #27. The earliest report dates March 20, 1958 and states that mining operations on claims were conducted by the Cameron Mining Company of Cameron, Arizona. It also states that no ore has been mined from this pit since April of 1957, but that a small amount of ore still exists to recover. A later report dated March 15, 1960 explains that mining has taken place for the first time since April 1957 and, that this pit "produced 18 tons of 0.23 % U_3O_8 during December 1959. . . com[ing] from the bottom of the pit along the west side." The third report dates June 16, 1960 and states that, "A total of about 40 tons of ore has been recovered by hand mining methods in the floor of the pit during January & February of this year." No other reports were written during this time.

A study conducted by Michael Shwennesen on Max Johnson No. 1 (AML #27) documented the radioactivity of this particular mine. They concluded that Max Johnson No.1's ponded water, a source of water for local livestock, exceeds Ariz surface water standard and the EPA primary drinking water standard for gross alpha, beta, and radionuclide [Ra226,228] emissions (p.6-6).

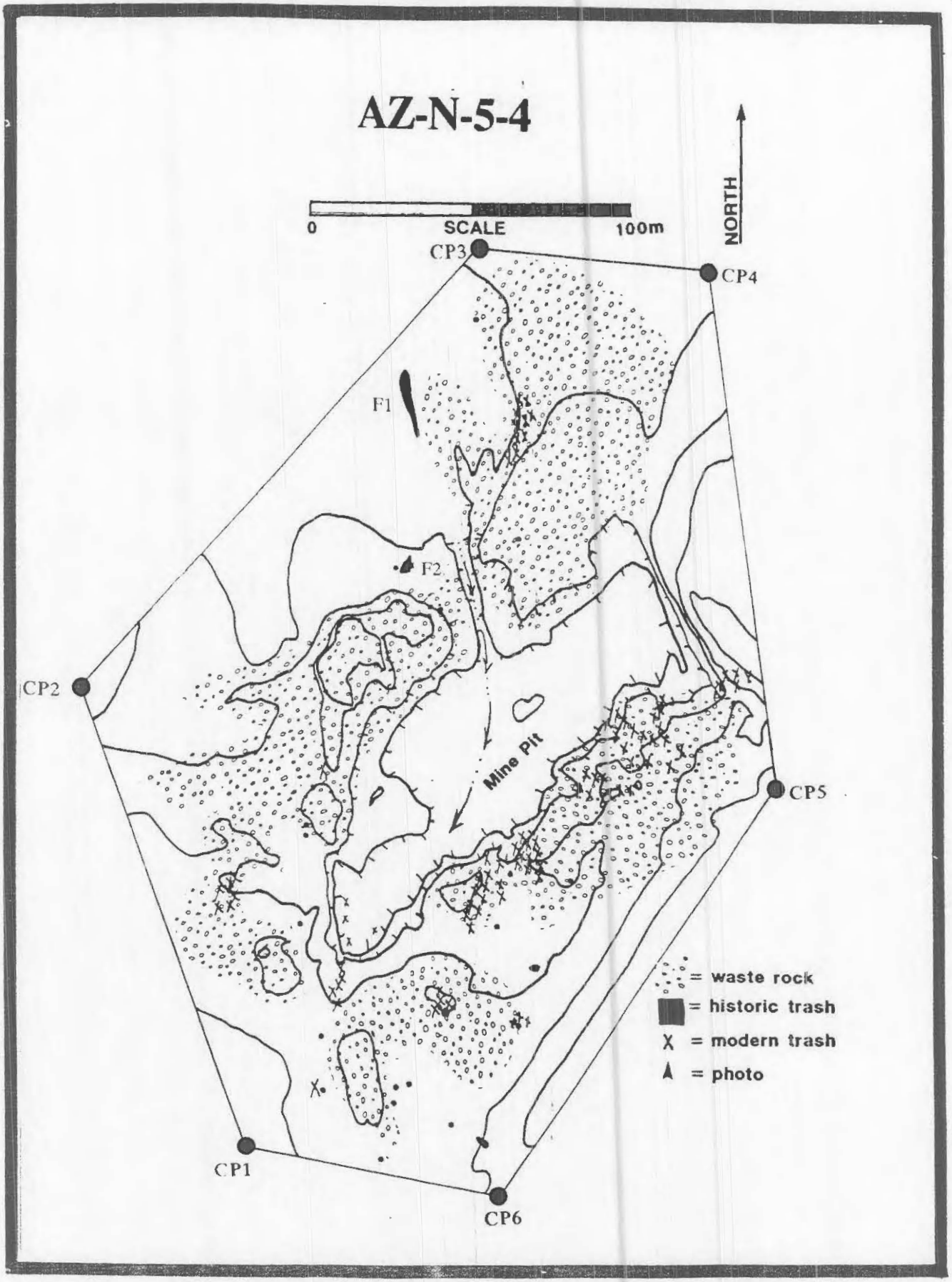


Figure 5. Map Illustrating Site AZ-N-5-4 (AMLRD #27), NNAD-91-375.

AZ-N-5-5, (Figure 6a & 6b)

NAMLRD Project Area: #28 (A & B)

Mining Claim: Lemuel Littleman No. 2

Site Type: Uranium ore open pit mine

USGS Map Reference: Cameron North, Arizona 7.5 min., 1988 provisonal edition.

UTM Coordinates: Mine Pit A: CP7: 3970500N 464880E
CP8: 3970680N 464920E
CP9: 3970590N 465090E
CP10: 3970480N 464920E
Mine Pit B: CP11: 3970380N 465270E
CP12: 3970580N 465280E
CP13: 3970520N 465360E
CP14: 3970460N 465400E
CP15: 3970340N 465340E

Site Size: A = ca. 163.6 SW-NE x 111.4m NW-SE; 18,225.04 sq m
B = ca.118.04m E-W x 200.39m N-S; 23,654.04 sq m

Site Description: This site consists of two adjacent small open pit mines cut into the Petrified Forest Member of the Chinle Formation. Mine pit A is another shallow mine pit measuring 72.7m SW-NE x 20.5m E-Wx at its' widest and 2.1m deep. It is oriented southwest curving gently to the northeast towards the point of access. Water erosion has cut its way into the the north side and/or edge of the mine, thus, water collects within the mine pit at certain times of the year becoming a source of water for livestock.

Waste rock and/or protore piles measuring about 1.8m above ground level border the edges of the mine pit. Directly north of this area is F1, a 1m in diameter circle which includes the following: a scatter of 26+

food/juice/coffee cans, several glass jars of jelly, a couple of spam cans, and a shoe sole. By the amount of food/juice/coffee cans, etc. present, it is likely that this area was the lunch area for the Navajo uranium miners of 30 years ago. F2 is triangular in shape with each side measuring approximately 11m long. Within this triangle can be found 10+ squashed tin cans, cardboard filters of some sort, a couple of oil filters, an old working glove, and a piece of cable wire. F3 consists of nine rusted iron drill rods, all of which are aligned north to south in a single row and protrude about .5m out of the ground.

Historic trash is scattered in and around this mine and includes the common debris: three 5 gal. gas cans, glass food and liquid bottles ("Pepsi" and "Coke"), 10+ rusted food/juice (some most likely commodity foods)/coffee cans, pieces of iron, a battery, and an oil can (''Prestone").

Since AML#28A and AML#27 are located adjacent to one another, it is of no surprise that scattered in and around AML 28A mine are more beer cans, a 12 pack case, a cardboard box, a tobacco lid, and one Pennzoil bottle, all of which make up the modern trash.

Mine pit 28B consists of a total of five trenched areas surrounded by small piles of waste rock and/or protore. The first three trenched areas lie along the eastern edge of a Chinle formation relatively flat outcrop that is aligned north to south. The outcrop bends to the east and turns into small hills, at which point can be found the last two trenched areas. Ponded water was available in all but the most northern trenched area. The water was being used by local coyotes.

Both historic and modern trash were to be found at this mine site. The historic trash included a 5 gal. gas can, a large drill bit, and three rusty food cans that are possibly associated with the mine. The rest of the trash

is modern and most likely blown-in from a nearby land-fill and from the trash scatter feature. The only feature, F1 measures 5m N-S x 1.5m E-W and consists of 200+ rusty cans ("Spam" & commodity food), 10+ Yellow Penzoil Bottles, a Michelob case box, 8+ milled lumber, a turquoise chair, a wooden ladder, 50+ glass bottles and jars (jam, coffee), 20+ tar paper pieces, plastic bottles ("Joy", "Chlorox"), and a shoe. Obviously, the locals began to dump their trash at this mine, but stopped after a couple of trips.

The rest of the mine site is scattered with modern trash. Trash has also collected in each of the trenched areas along with the ponded water. The modern trash encountered and recorded were the following: 16+ cardboard pieces, a chlorine bottle, 20+ beer cans ("Coors", "Michelob", "Budweiser"), an old green shirt, 5+ rusted food cans, a glass jar, a plastic bottle, 2 rubber tires, 2+ spray cans, and a piece of sheet metal.

Historical information on 28A and 28B is scarce. However, they were mined by the Diamond Uranium Corporation and produced 5,819 tons of uranium ore between 1955-60.

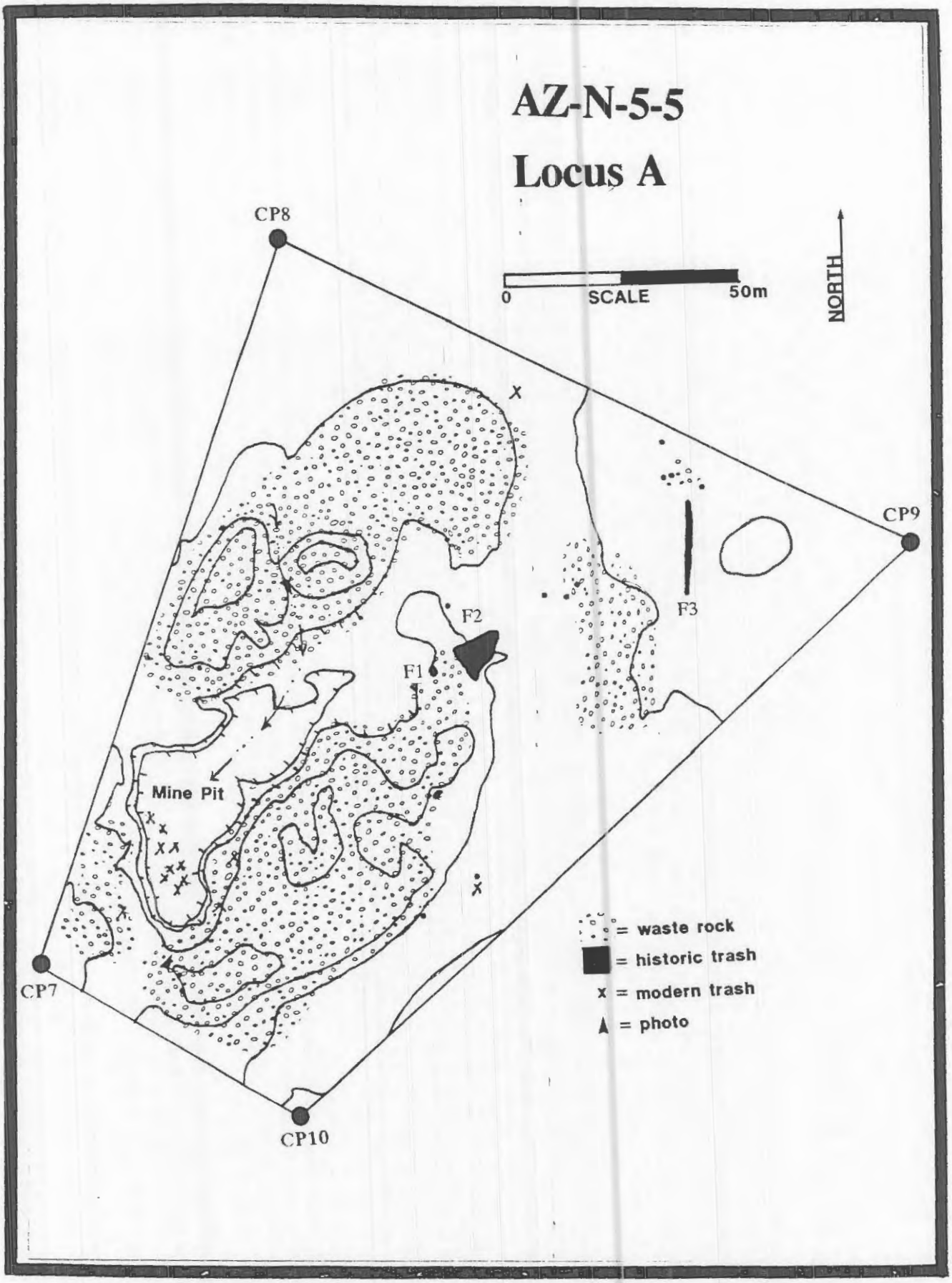


Figure 6a. Map Illustrating Site AZ-N-5-5 (AMLRD #28) Locus A, NNAD-91-375.

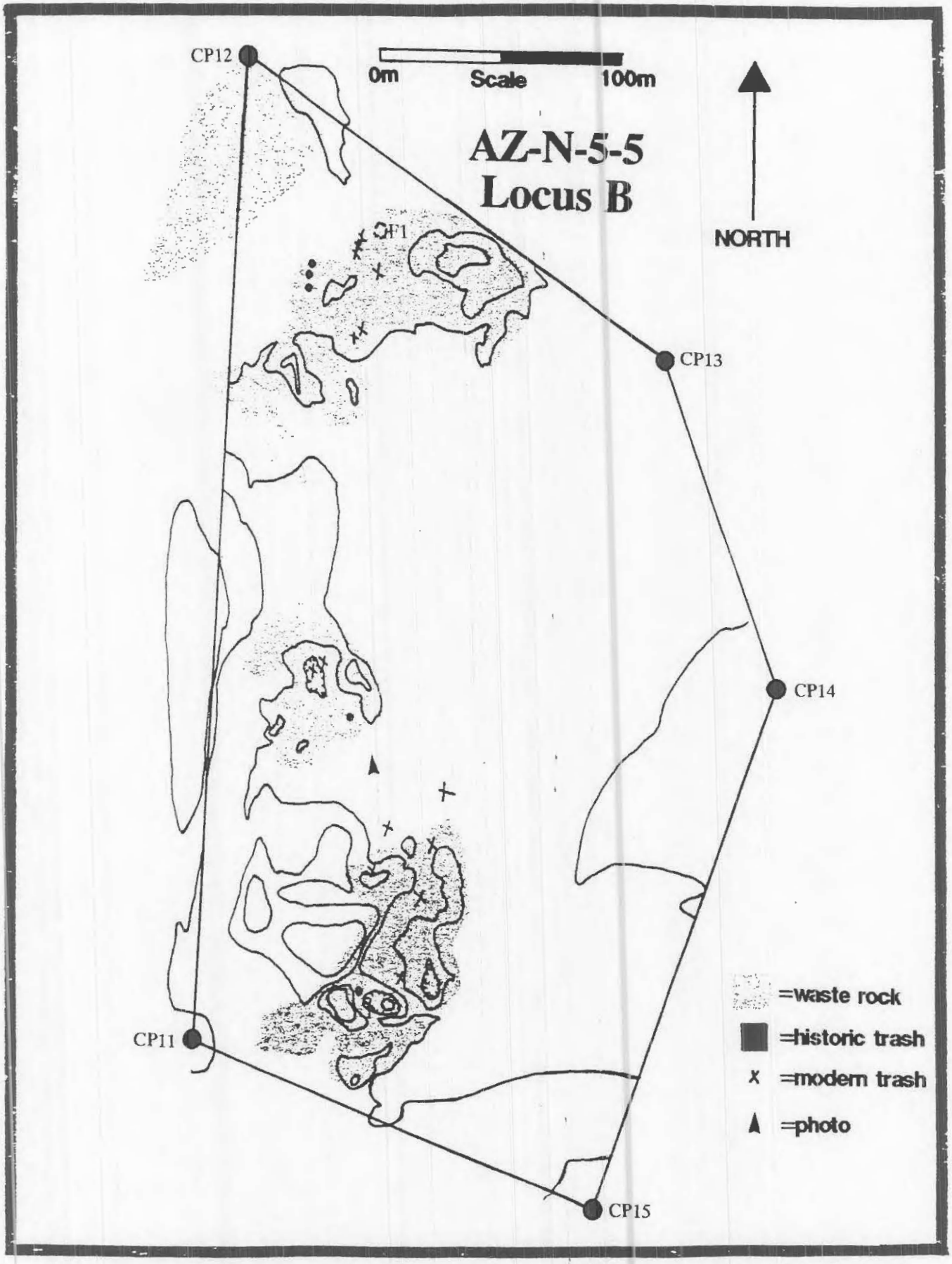


Figure 6b. Map Illustrating Site AZ-N-5-5 (AMLRD #28) Locus B, NNAD-91-375.

AZ-N-5-6 (Figure 7)

NAMLRD Project Area: #29

Mining Claim: Charles Huskon No. 1, (Mining Permit No. 46)

Site Type: Uranium waste rock and/or protore mounds

USGS Map Reference: Cameron NE, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates:

CP16: 3970040N 465510E

CP17: 3970240N 465520E

CP18: 3970300N 465560E

CP19: 3970350N 465700E

CP20: 3970240N 465740E

CP21: 3970100N 465720E

Site Size: ca. 277.8m N-S x 230.2m E-W; 63,949.6 sq ft

Site Description: This mine site consists of extremely large Chinle formation greenish yellow hills which have been trenched and bladed for uranium. These sparkling hills exhibit bits and pieces of gypsum. Perhaps because of this mine site's proximity and visibility to State Highway 89, and major dirt roads, it has become quite the recreational area. Not only is NAMLRD #29 a choice partying area, evidenced by numerous beer cans/bottles and wine/whisky bottles, but it is also the local target practice and ATV park. The uranium waste rock and/or protore piles, serve as the perfect obstacle course for Cameron's ATV riders. All of the waste rock and/or protore piles exhibit tire tracks.

The mine site contains a main access road, which cuts into the mine from the southwest and bends abruptly south at which point the access road ends. This area is well hidden from view and contains the first three features encountered. None of the features are historic. The only historic trash

recorded includes the following scattered in and about NAMLRD #29: 14+ commodity food cans, an old machine part, a wooden stake, and a 5 gal. water container. The rest of the trash is modern.

A total of seven features were encountered and recorded at NAMLRD #29. The first feature, F1, measures 19.8m E-W x 15.9m N-S and consists two recent ash stains associated with the remnants of 7+ burned tires or wire (.5m in diameter), and a modern sandstone hearth (.5m x .5m) with associated wood and lighter fluid. The second feature, F2, measures 8m in diameter and includes an old rusted bed spring, a scattering of unidentified of animal bones, an old transistor radio tube, thick 4cm pieces of purplish glass, a "Budweiser" can, and various machine parts. F3, measures 31.7m N-S x 23.8m E-W and consists mostly of a scattering of glass sherds derived from green, brown, and clear liquor bottles. One ash stain, an oil filter, 30+ beer cans and bottles, 20+ cinder block pieces, and one engine filter make up the remaining modern trash identified at this feature. The fourth feature, F4, is located out and east of the hidden trenched area. F4 is situated on the eastern side of this mine site measuring 15.9m N-S x 11.9m N-S and includes 20+ "Budweiser" bottles, an empty propane tank, 10+ rope pieces, a cup, a carburetor filter, a muffler, and a seat belt. F5, is 7.94m N-S x 15.9m E-W and is situated within a water drainage. The modern trash in F5 includes 15+ "Budweiser" cans/bottles, a dense scatter of green, brown, and clear glass, a "Thunderbird" whisky bottle, a "Pennzoil" bottle, and a piece of sheet metal. F6 and F7 both measure 6m in diameter. F6 is an ash stain associated with the remnants of 15+ burned tires or rusted wire bundles. F7 consists of 25+ 30/30 "Winchester" bullet shells. As stated, NAMLRD #29 is frequently utilized by the public as illustrated by the seven features recorded and the remaining modern trash.

The modern trash reflects the trash found in the features. That is, most of the trash consists of beer cans and bottles. NAMLRD #29 exhibited trash throughout its' borders. The trash included the following: 30+ beer cans ("Budweiser", "Coors"), 11+ beer bottles ("Budweiser", "Coors"), 8+ "Thunderbird" bottles, 3+ 12 pk. cases ("Michelob", "Coors") , 3+ glass sherd scatters, 5+ milled lumber 2" x 4" boards, "Valvcline Oil", 10+ burned tire remnants or rusted wire bundles, an orange juice can, "Octane Boost", wooden lamp base, "Penzoil", rubber tubing (1 1/2" in diameter), 2+ 1ft. long propane tanks, 2+ bolts, 2+ pieces of metal, a pair of "Wranglers", a child's sweat pants, a "Vaseline Intensive Care" lotion bottle, a piece of sheet metal, a bedspring, a 4ft long garden hose, an Easter basket, a plastic cup, a piece of carpet, 4+ plywood panels, 3+ food glass bottles, a cardboard box, a doll's bottle, a kerosene can, and a tissue paper box. This mine has obviously been thoroughly utilized by the local community of Cameron, Arizona.

Charles Huskon No. 1 was one of the most significant Cameron area mines, since it produced approximately 23,127 tons of uranium ore between 1951-1961 through the Rare Metals Corporation. Eleven reports by Chas M. McConnell were consulted about this particular mine. The first dates May 28, 1957. Stripping operations were conducted by the Bonner and Hall Construction Company with Mr. J.C. McFarlane in charge at this time. Twenty-five Navajo workers were under his supervision working 5 1/2 days a week. The second report dates April 9, 1958. Stripping operations were conducted by the Isabel Construction Company with John Wright in charge. Mining operations were conducted by the Rare Metals Corporation with J.C. McFarlane as mine supervisor. The ore mined from this pit was from within "low buttes" measuring 1 foot to 15 feet thick. The ore itself measured 1 foot to 5 foot thick . Apparently, the ore from this pit was of a higher grade than most in

the district for awhile. Also mentioned in this report was the merger between the Arrowhead Uranium Company and the Rare Metals Corporation on December 31, 1956. The third report dates March 24, 1959 and states "Huskon No.1 mine...produced 174 tons of 0.19% U_3O_8 ore in July 1958, and there has been no production since that date." The fourth report dates August 21, 1959 and outlines the termination of Rare Metals and the subsequent turn over to the Cameron Mining Company. Partnerships with the Steinberger Drilling Company with Page Blakemore in charge was discussed. A fifth report dating December 3, 1959 explains that 151 tons of 0.165% U_3O_8 ore was produced since July 1, 1959. The sixth report is brief and dates February 7, 1960. It mentions that "34 tons of 0.22% ore was shipped from Huskon No.1." A seventh report mentions that the crew numbers 15 men, and that "Huskon No.1...has produced 22 tons of 0.21 percent U_3O_8 ore since the last examination." The eighth report June 16, 1960, notes that twenty-two tons of 0.20% U_3O_8 ore were mined in February 1960, and that no further work has been done. The ninth report dates November 3, 1960 and notes that mining is performed by the Cameron Mining Company with P. Blakemore in charge. The Bureau of Mines concluded that "dust and radiation hazards" do not exist in any of the mines. The tenth report dates May 10, 1961 and notes that a change in organization of the Cameron Mining Company has "brought out the interests of the Steinberger Drilling Company," and Mr. George Bastedo has been placed in charge of operations at Cameron." The eleventh and final report dates August 15, 1961 and states that Huskon No. 1 "has not been operated since the date of the last inspection."

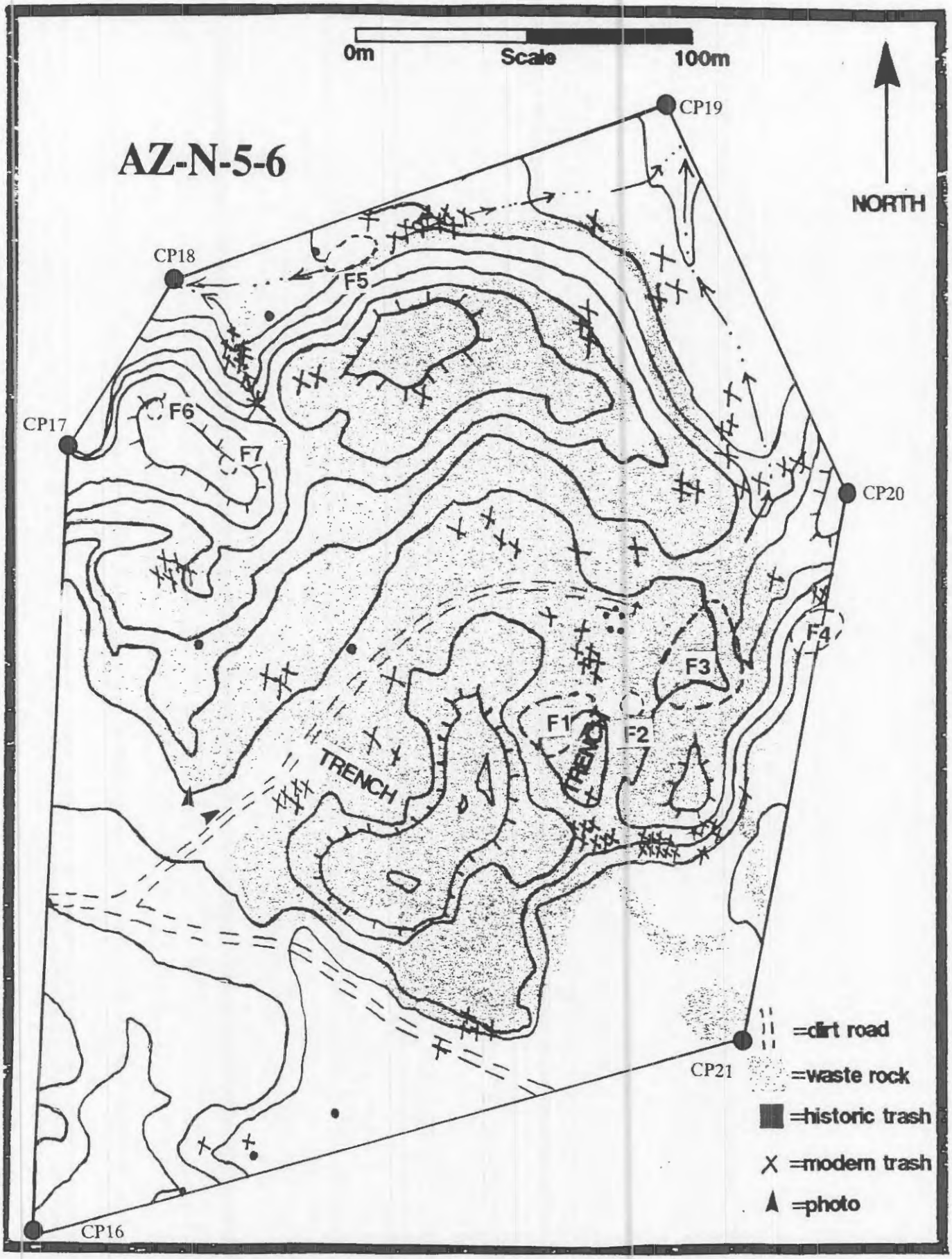


Figure 7. Map Illustrating AZ-N-5-6 (AMLRD #29), NNAD-91-375.

AZN-5-7 (Figure 8)

NAMLRD Project Area: #30

Mining Claim: Max Johnson No. 10

Site Type:

USGS Map Reference: Cameron South, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates:

CP22: 3969880N 464780E

CP23: 3969940N 464710E

CP24: 3969980N 464730E

CP25: 3969980N 464820E

Site Size: ca. 101.5m N-S x 105.9m E-W; 10,748.9 sq ft

Site Description: This site is basically a platform which is a result of blading a small terrace with a rounded end. The rounded end of this Chinle formation linear outcrop was bladed for uranium. The rounded end exhibits small trenched areas to the east and the west. Water flows along the western edge of the platform and proceeds south to the Little Colorado River. This mine site is probably the smallest of the eleven and contains minimal trash. Historic debris includes a 1 gal. gas can and a rusty food can. Modern trash consists of a cardboard box, a soda can, and a glass bottle (rum).

Historical information concerning this mine is scarce. However, Max Johnson No. 10 was operated by the Rare Metals Corporation and produced 196 tons of uranium ore between 1950-1960.

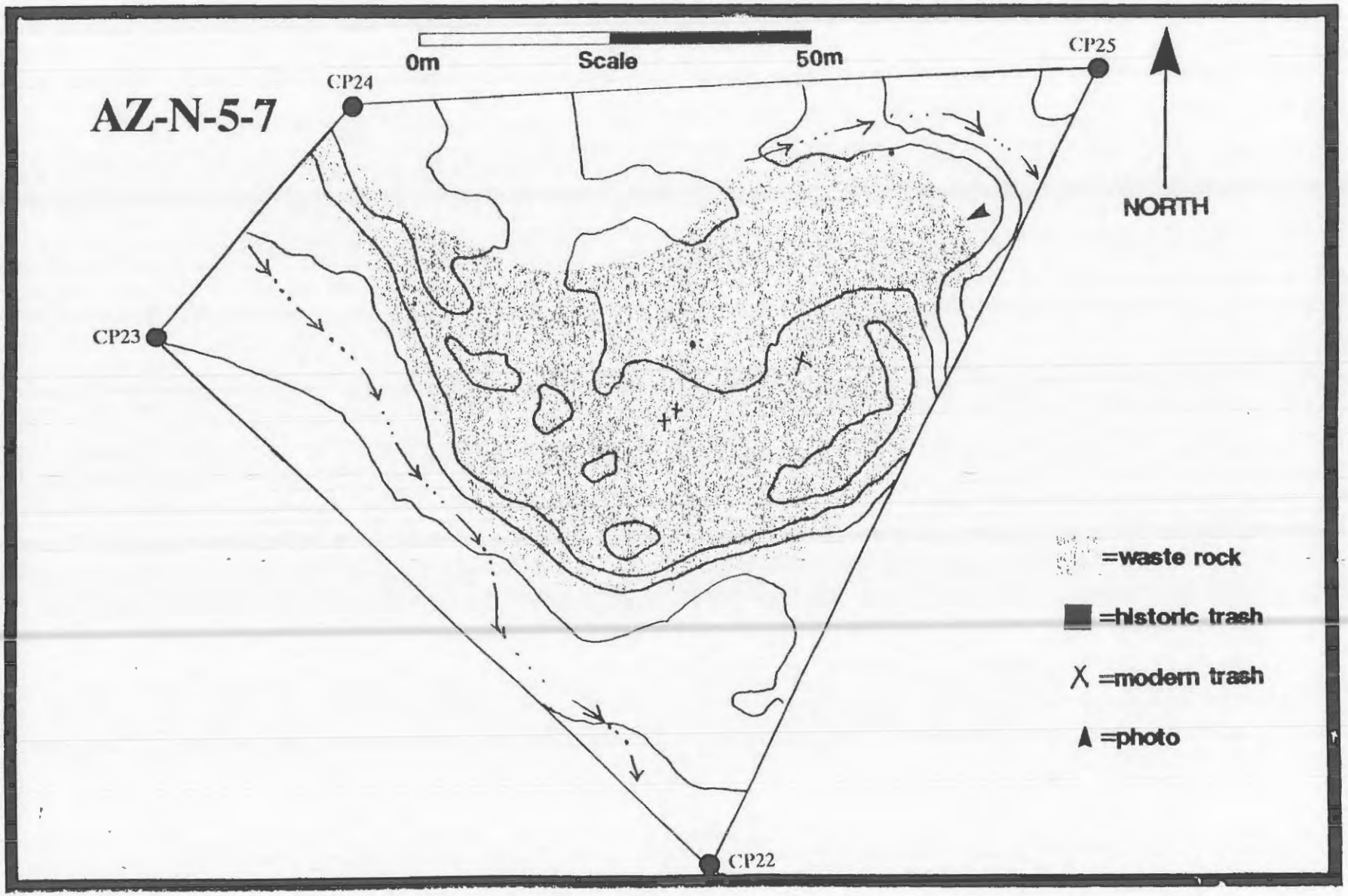


Figure 8. Map Illustrating AZ-N-5-7 (AMLRD #30), NNAD-91-375.

AZ-N-11-3 (Figure 9)

NAMLRD Project Area: #35

Mining Claim: Evans Huskon No. 2 (Mine Permit 492)

Site Type: Uranium waste rock and/or protore piles

USGS Map Reference: Cameron NE, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates: CP26: 3969620N 466160E

CP27: 3969790N 466100E

CP28: 3969840N 466180E

CP29: 3969760N 466370E

Site Size: ca. 215m N-S by 255.8m E-W; 54,997 sq m.

Site Description: This site consists of waste rock and/or protore piles formed in a circular shape with two openings to the east. The whole of this roughly circular area, which makes up the AML#35 mine measures, 162.8m N-S x 122m E-W.with the waste rock and/or protore piles measuring 1-5m above ground level. AML#35's piles of waste rock are probably a result of bulldozing whole Chinle formation hills or mounds to reach the uranium within, thus creating piles both very small and large of waste rock and/or protore.

Both historic and modern trash can be found all around this area. Historic trash is scarce but, consists of a bimetal pop can, 13+ rusted commodity food/juice cans, various engine parts, glass bottles, scattered milled lumber, and an old WD-40 spray can. This area was also utilized for socializing in the form of alcoholic drinking, as modern shattered glass is highly concentrated to the east and north of the waste rock piles. Fifteen glass bottles ("Gatorade" and 1 "Barqs's Rootbeer") were recorded to the south of the piles along with a baby's bottle. Inside the circle to the south, a recent oil changing scene consisted of 5 Penzoil yellow plastic

containers, a 1 qt. oil bottle, one WD-40 spray bottle, an oil filter, and lastly, a recent oil stain.

Evans Huskon No. 2 produced approximately 1,853 tons of uranium ore in 1957. One report by Boyd Bywater and nine reports by Chas M. McConnell were made for Evans Huskon No. 2. A report dating May 10, 1961 mentions that "California interests headed by Dr. Donald Wenson has bought out the interests of the Stienberger Drilling [company] and Mr. George Bastedo has been placed in charge of operations at Cameron." This report also states that the mine has been sublet to Winford Jones. The next report dating August 15, 1961 mentions that Page Blakemore was the General Manager of the Cameron Mining Company, the company in charge of mining operations. And, the latest report dates July 28, 1964 and mentions that the lease formerly held by El Paso Natural Gas has been transferred to Rare Metals Cooperation of America and that this mine was ready for abandonment.

A Mining Health and Safety Engineer, Mr. L.G. Anderson, of Rare Metals Cooperation of America conducted his observations in order to identify and correct all safety hazards on May 16, 17, & 18, 1960. He noted that "Radiation tests were not made at this time as the radiation hazards in open pits in this area have been proven to be negligible as reported in the previous inspection reports."

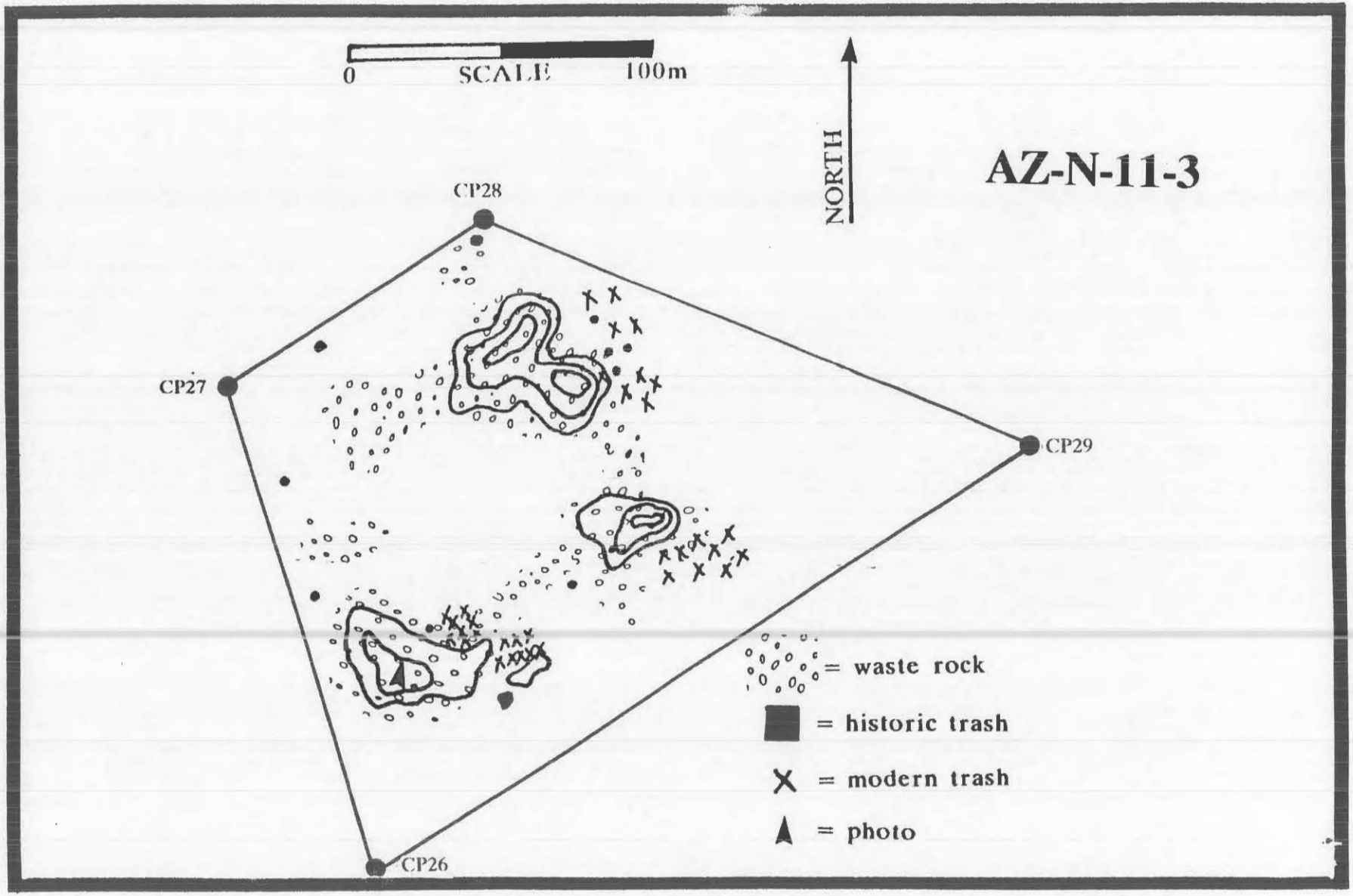


Figure 9. Map Illustrating AZ-N-11-3 (AMLRD #35), NNAD-91-375.

AZ-N-6-1 (Figure 10)

NAMLRD Project Area: #36

Mining Claim: Yazzie No. 101

Site Type: Uranium ore open pit mine

USGS Map Reference: Cameron North, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates:

CP30: 3969780N 466480E

CP31: 3970060N 466310E

CP32: 3970080N 466580E

CP33: 3970020N 466660E

CP34: 3969840N 466660E

Site Size: ca. 328.9m E-W x 288.4m N-S; 94,854.8 sq m

Site Description: This site consists of numerous waste rock and/or protore piles in a concentrated area. No deep pits exist, but two obvious pit depressions are apparent, which are labeled "Trench" on the site map. Mining probably demolished several colorful mounds in the Shinarump Member of the Chinle Formation to get at the Uranium. The waste rock and/or protore was pushed with bulldozers and systematically spread or piled in all directions to create mounds no more than 3m or 10ft in height.

Scattered throughout the area is historic trash consisting of approximately two squashed oil cans and filters, an old wooden hammer handle, three black rubber tubes, a piece of battery cable, an old C battery, 4+ pieces of rusted metal, an unidentified machine part, 2 pieces of cable wire, a WD-40 spray can, five 2 gallon gas/kerosene cans and a 1 gallon gas/kerosene can, 10+ pieces of milled lumber, a 50 gal. drum, a 1 gal. paint bucket ("Dutch Boy"), 17+ commodity food cans, a coffee can, 2+ bimetal pop cans, 2+ glass pop bottles, a "Nesbitts of California" soda bottle, a beer bottle, a

boot, and an old metal hair roller. Most, if not all of the historic debris, is a result of the uranium mining. Modern trash includes a couple of drinking areas, exemplified by modern wine ("Roma"), rum ("Puerto Rico") glass bottle pieces, and several "Coors" aluminum cans. F1 consists of a 1m x 30m trench filled with 15+ aluminum soda cans. Other modern trash (egg cartons, potato chip bags, plastic bags, cardboard boxes, etc.) has blown in from the nearby Cameron landfill located just west of this site.

No historical references concerning the Yazzie No. 101 mine were found. However, a total of 4,955 tons of uranium ore were mined during 1956-58 and 1960-61.

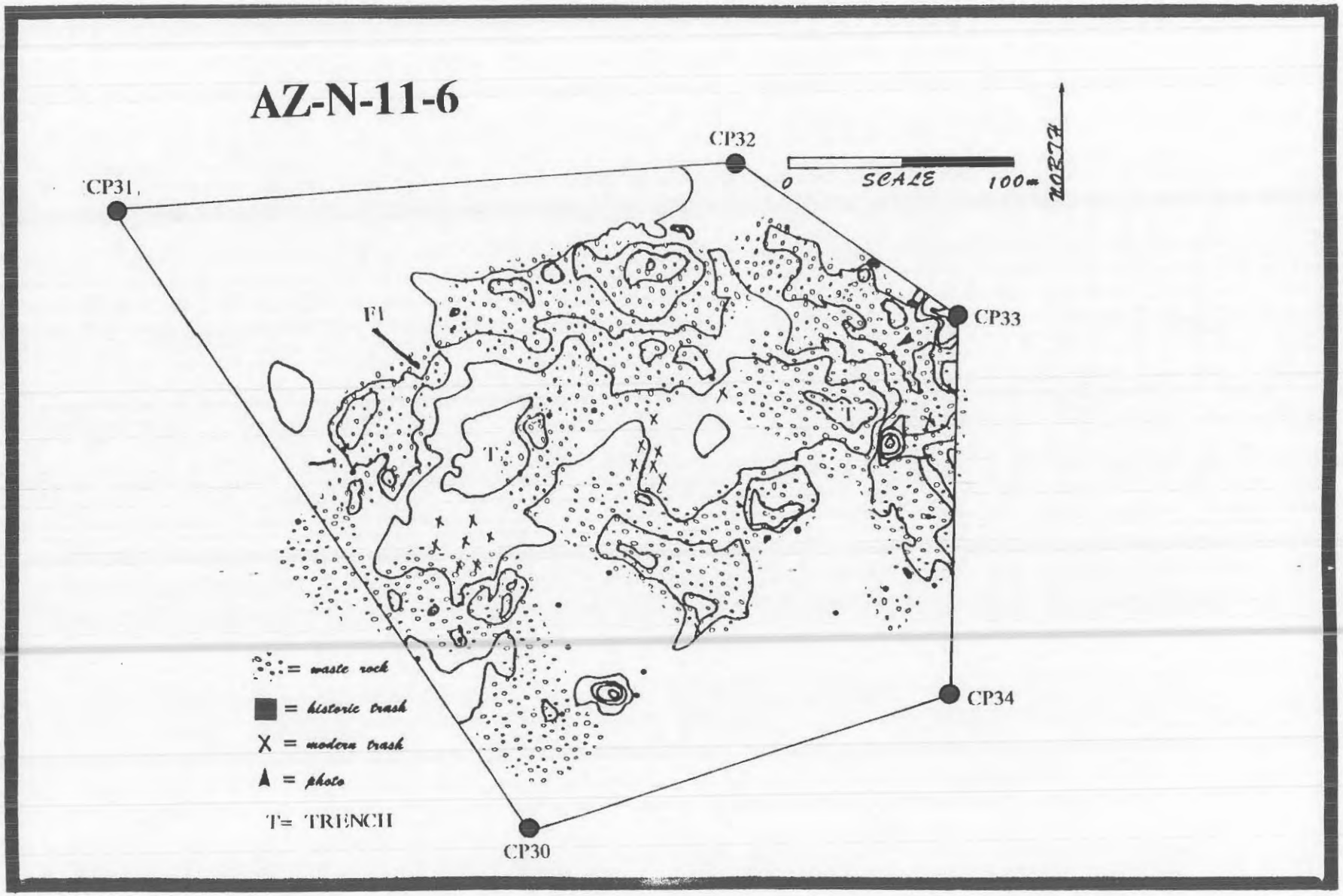


Figure 10. Map Illustrating AZ-N-11-6 (AMLRD #36), NNAD-91-375.

AZ-N-11-4 (Figure 11)

NAMLRD Project Area: #38

Mining Claim: Boyd Tisi No. 2 (Mining Permit No. 468)

Site Type: Uranium ore open pit mine

USGS Map Reference: Cameron SE, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates: CP35: 3968480N 466720E

CP36: 3968580N 466570E

CP37: 3968720N 466760E

CP38: 3968700N 466840E

Site Size: ca.235m N-S x 201.9m E-W; 47,547.5 sq m

Site Description: This site basically consists of three waste rock and/or protore piles with one pile to the north and the other two piles to the northwest and southeast, respectively. This mine consists of several hills of waste rock and/or protore piles, which are perhaps a result of mining several Chinle formation low hills for the uranium within. The mounds measure approximately from 220.8 ft (67.3m) to 644 ft (196.3m) in length. Water collects within the boundary of the three mounds, most likely flowing in from an unnamed ephemeral stream located at the north edge of the northernmost mound. Tamarisk and Camel Thorn grow abundantly within this pit as well.

Scattered on the outer edge of the southeastern mound is both modern and historic trash, some of which has been washed away by the nearby stream. Historic trash includes a couple of pieces of cable wire, a rusty food can, a pile of milled lumber and an adjoining pile of 3" nails, pulled from these boards. Modern Trash again has probably blown in from the nearby home or from a landfill west of this area. Styrofoam, cardboard pieces and a cardboard

box, a Diet Rite soda can, a tin food can and a Milwaukee Beer can were inventoried during this survey.

Historical information is scarce but, this particular mine produced 794 tons of uranium ore in 1957-58. Also, a survey was conducted by the Bureau of Land Management entitled "Report on the Cameron Open Pit Uranium Mines." The Boyd Tisi No. 2 mine was found to measure 30,000 CPS (Counts per second) based on readings taken with a Scintillometer, Geometric Model GR101A in and around the mounds. The overall "Background reading was 20, 000 CPS " at waist height. This is the only reference to AML #38.

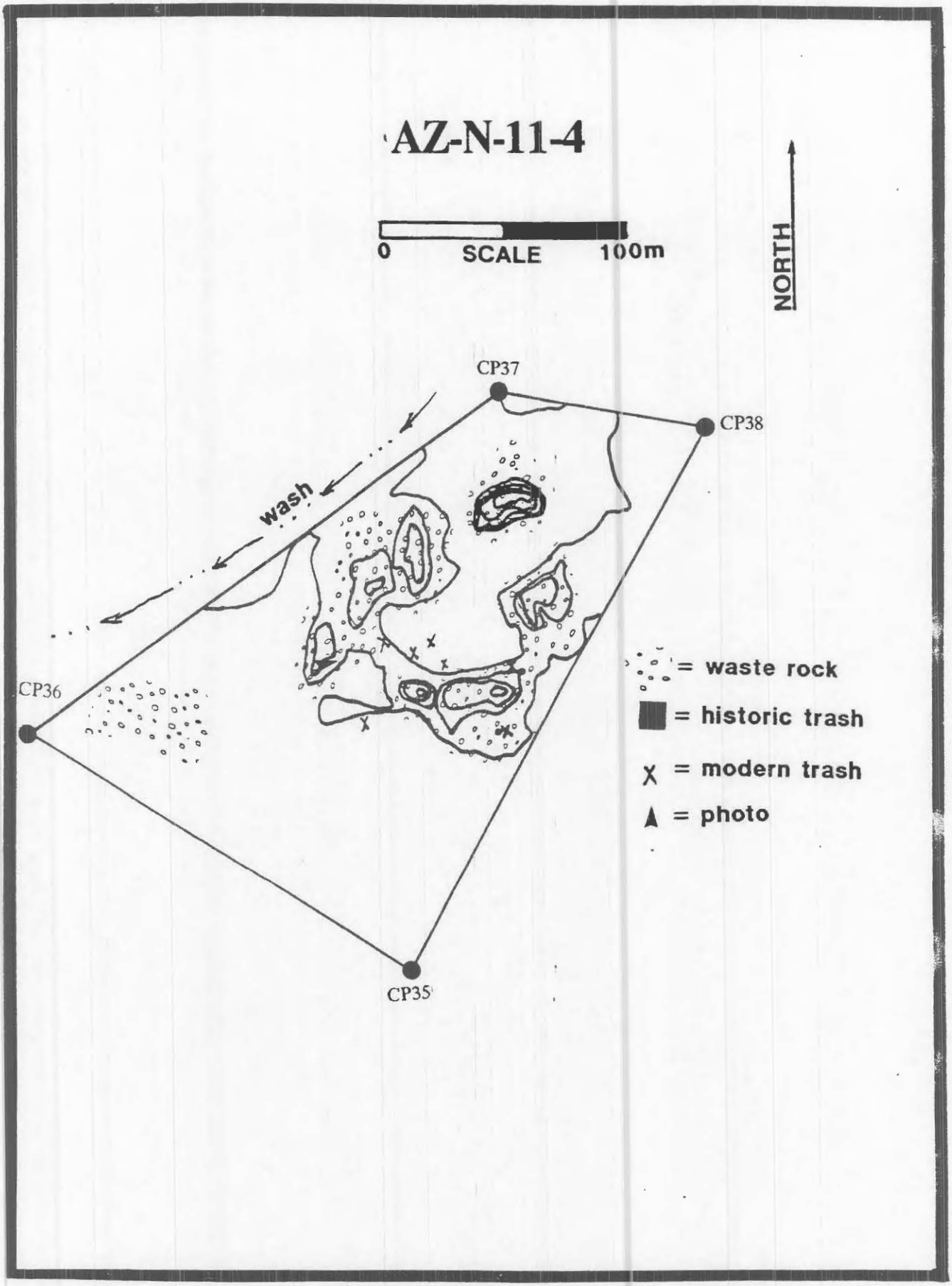


Figure 11. Map Illustrating AZ-N-11-4 (AMLRD #38), NNAD-91-375.

AZ-N-11-5 (Figure 12)

NAMLRD Project Area: #39

Mining Claim: Juan Horse No. 3

Site Type: Uranium ore open pit mine

USGS Map Reference: Cameron SE, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates: CP39: 3968300N 467000E

CP40: 3968480N 466760E

CP41: 3968700N 466860E

CP42: 3968470N 467100E

Site Size: ca. 317.9m NW-SE x 249.7m NE-SW; 79,379.6 sq m

Site Description: This site consists of a 50 ft (15.24m) deep tad-pole shaped mine pit that is 745 ft (227m) long and 193.7 ft (59m) at its' widest. The pit contains low piles of waste rock and/or protore along the northern and eastern border and part of the southern border. These low piles reach 8 ft (2.5m) in height at their highest. Water enters this pit to the east or at the tail of the tadpole and drains into the pit. Tamarisk grows within the pit and hoofprints indicate its' use as a water hole by local livestock at certain times of the year.

Historic trash associated with the mine and modern trash are to be found both in and around this pit. This mine pit contained four features (F1,F2, and F3), consisting of historic debris. The first, second, and third features served most likely as lunch areas for the uranium miners, as no oil cans, filters, or machinery parts were encountered. F1, measures 2m E-W x 5m N-S and consists of a church key opened food can and a dense scatter of green and clear glass shards. The second, F2, measures 7m E-W x 5m N-S. A scatter of 50+ church key opened food/juice cans and one Budweiser beer can were

inventoried. F3 measures a 2m NW-SE x 10m NE-SW and consists of a scatter of metal can pieces, several slabs of thick metal (painted yellow), 15+ pencil sized metal rods, and several pieces of burnt/melted globs of metal. The last feature, F4, consist only of 10+ food cans in a roughly circular shape (2m diameter). Other historic trash inventoried were as followed: two 5 gal. gas cans, a 1 gal. gas can, lighter fluid, 2 coffee cans, 5+ commodity food cans, a piece of cable wire, a round 15 cm in diameter and 2 cm thick metal tube, tire tubing and a piece of tire. The modern trash was most likely blown in from a nearby residence. Empty plastic bottles and pieces of cardboard lay inside of the pit. A single beer can was the only other modern trash observed.

Historical information for Juan Horse No.3 is abundant. It was mined by Wells Cargo Inc. and produced 2,343 tons of uranium ore between 1958-59. Apparently, this particular mine often flooded during heavy rains, thus, causing an interference and delay in uranium mining, as stated in the report submitted by Chase McDonnell on December 7, 1959 report. Another report dated September 10 for the time period of July 30-August 1, 1959 reveals that only 24 men were employed by the Cameron Mining Company.

Fred Dernlisy, Paul J. Buff, and Moon Hum on May 9, 1985 took readings off a Scintillometer and determined that this mine read 30,000 CPS or lower. and that "Gamma radiation measurements ranged from 10-100 micro R/hr."

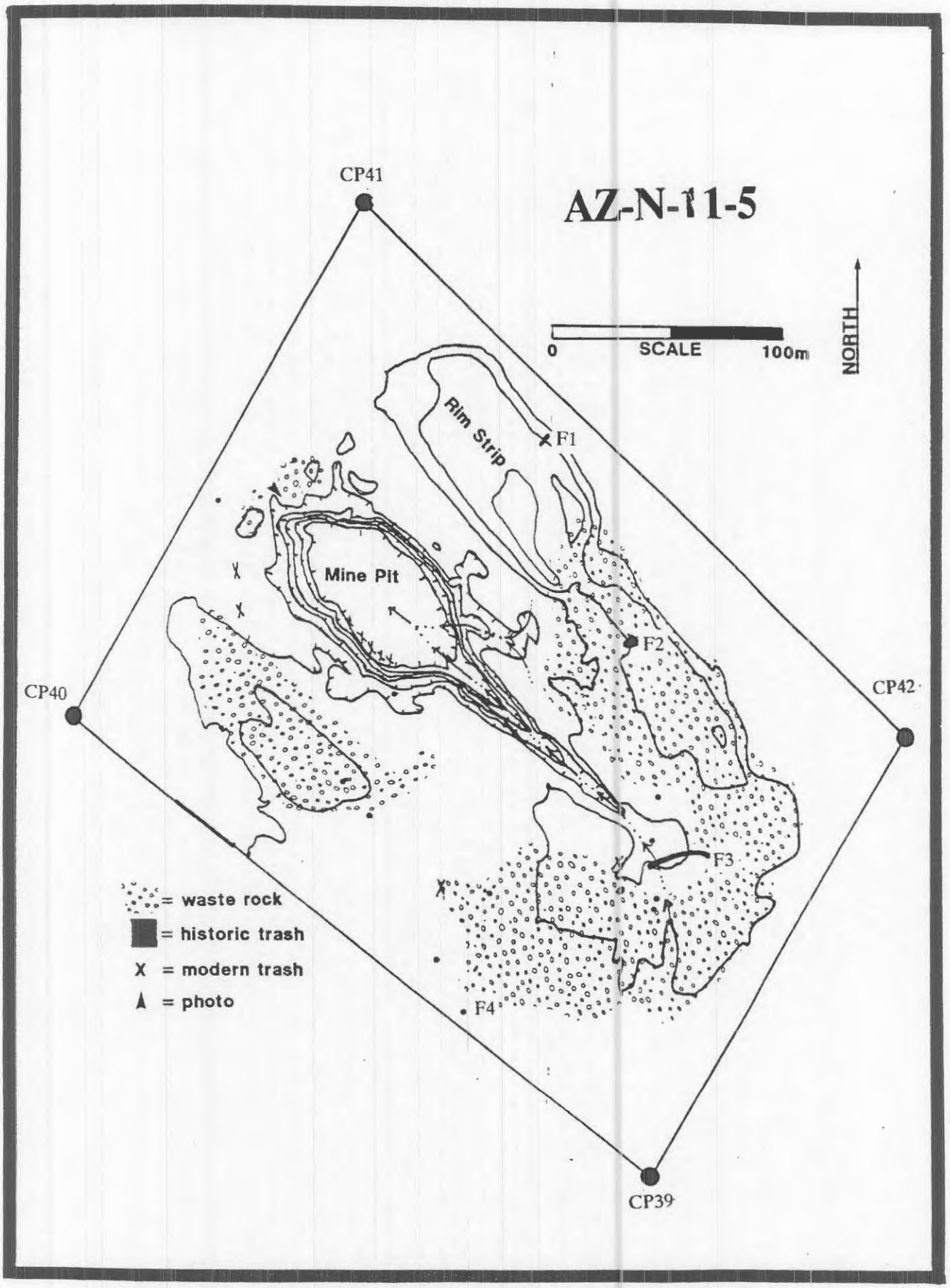


Figure 12. Map Illustrating AZ-N-11-5 (AMLRD #39), NNAD-91-375.

AZ-N-12-8 (Figure 13 A, B, C, & D)

NAMLRD Project Area: #49

Mining Claim: Charles Huskon No. 3 (Mining Permit 65 and Lease No. 1571)

Site Type: Uranium ore open pit mine

USGS Map Reference: Cameron South, Arizona, 7.5 min, 1988 provisional edition and Cameron SE, Arizona 7.5 min., 1988 provisional edition.

UTM Coordinates:

Mine Pit A:	CP43: 3963780N 465890E
	CP44: 3963880N 465860E
	CP45: 3964180N 465880E
	CP46: 3964170N 466090E
	CP47: 3963760N 466060E
Mine Pit B:	CP48: 3963740N 466260E
	CP49: 3963800N 466250E
	CP50: 3963880N 466240E
	CP51: 3963940N 466340E
	CP52: 3963800N 466420E
Mine Pit C:	CP53: 3963520N 466250E
	CP54: 3963380N 466220E
	CP55: 3963680N 466320E
	CP56: 3963570N 466340E
Mine Pit D:	CP57: 3963800N 466660E
	CP58: 3964320N 466820E
	CP59: 3964390N 467100E
	CP60: 3964170N 467280E
	CP61: 3963960N 467060E

Site Size: A= ca 445.2m N-S x 493.2m E-W; 219,572.64 sq m

B= ca.169.6m N-S x 171.7m E-W; 28,899 sq m

C= ca.161.1m N-S x 116.7m E-W; 18,8090.37 sq m

D= ca.445.2m N-S x 493.2m E-W; 219,572.64 sq m

Site Description: This site consists of four adjacent uranium mines cut into the Petrified Forest Member of the Chinle Formation. Mine pit "A" is the second largest of the four mines, and consists of bulldozed areas along the western side of several Chinle Formation hills. An unnamed ephemeral stream runs along the base of this mesa flowing north towards the Little Colorado River. One mine pit, a shallow pit and several trenches characterize this mine site. The mine pit measures 103m N-S x 87.6m E-W. Waste rock was pushed up and out along the west border and northeast of the mine pit. Mining occurred in a linear cut towards the south along the west side of the mesa. A mine trench is located directly south of the large mine pit. This mine trench measures 3.4m deep and 77.3m E-W x 87.6m N-S. Waste rock was pushed west of the mine. Small E-W trenched areas fall south of the shallow mine pit with waste rock being plowed to the west as well. The unnamed ephemeral stream no doubt carries a percentage of waste rock into the Little Colorado River. The whole of the mined area measures 381m N-S x 170m E-W.

All of the debris recorded for mine "A" was historical. Three features were recorded. The first, F1, is located just southeast of the shallow mine pit. A total of nine drill/test holes dot an area roughly 51.5m E-W x 25.78m N-S. The holes measure approximately 8-10cm in diameter., and the depth of the holes is unknown. F2 is a possible oil changing area, and consists of 7+ squashed oil cans, 2+ steel rods, and one steel can. F3 is most likely the maintenance area based on the type of debris (8+ oil filters, 9+ oil cans, a filter, a back hoe tooth, 1 glass bottle, and 2 unidentified cans) recorded.

Overall the remaining historical debris inventoried was found mostly on the southern half of the mine. These objects included a 5 gal. gas can, a latched steel 5 gal. gas can, 4+ oil cans, and a scattering of milled lumber. No modern trash was observed during the survey.

Mine pit "B" and "C" are roughly identical in size and, both are free of large mine pits. In mine "B" the whole of the area has been bladed and piles of waste rock and/or protore have been bulldozed out of the northern side of the same Chine Formation hills as mine "A". Mine "B" measures approximately 131.4m N-S x 131.4m E-W. Piles of waste rock and/or protore piles have been placed on the northern end of the site and at its' midsection. A lone pile sits at the southwestern corner of the site. Numerous trenches and roads are visible at mine "B", but no pits. A small amount of historical trash was encountered and consists of the following: a metal lunch bucket bottom, an old WD-40 spray can, 2+ possible rusted food cans, a 5 gal. gas can, 2+ oil cans, a section of iron tubing, and one drill hole. The historic trash is scattered in the southern, eastern, and mostly northern area of this site. A single can of fluorescent pink spray paint was the only modern trash recorded.

Mine "C" measures 111.6m E-W x 120.9m N-S, and is the smallest of the 49 sequence. This mine consists of roads and piles of bladed waste rock and/or protore piles, but no pits. Water collects in a depression on the southern half of this site and runs north through the center of this mine towards the Little Colorado River. Mining operations concentrated again on the northern side of a Chinle formation large mesa within a large ravine. Modern trash is nonexistent, but historical trash includes the following: a 5 gal. gas can, an "MJB Coffee" Can, an unidentified oil can, a piece of cable wire, 3+ possible food cans and, one red rubber fibrous tubing.

Mine "D" is the largest of the 49 sequence. Several Chinle formation hills exhibit deep gouges and trenches, while piles and piles of waste rock and/or protore have been carefully deposited on the northern half and unceremoniously dumped in the southern half of the mine. This mine is free of actual mine pits, and instead exhibits large trenches that split once large Chinle formation hills in half. The waste rock is a result of such trenching. Two major trenches are easily identified. The largest is situated in the northeastern end of the site and is aligned northeast to southwest. The trench measures 102.9m N-S x 137.2m E-W. The second trench is located in the midsection of the mine, southwest of the larger trench. This trench measures 68m N-S x 20m E-W and is aligned southwest to northeast.

Historic trash was the only trash recorded. As NAMLRD #49 is one of the major producing mines of uranium, it makes sense that this mine is also abundant in its' historical debris. A total of four features were encountered and recorded at mine "D". The first feature, F1, is a 6m in diameter and the second feature, F2, is 13.7m N-S x 10m E-W. Both features were dumping grounds for cable wire with 4+ long pieces in the former, and 6+ long pieces in the latter. F3, is a 3m long piece of old conveyor belt, which was entrenched on the side of a hill resembling a dinosaur fossil. The final and fourth feature, F4, measures 37.8m E-W and consists of four drill holes spaced equally apart aligned east to west on the eastern side of a bladed hill.

Modern trash was not observed at this mine. However, historical trash was quite abundant, as NAMLRD #49, was one of the most productive in producing significant amounts of uranium ore. The following lists the amount of debris inventoried within "D": an iron ring for a bearing, a "u-joint", a fuel pump, a brake shoe, an anchor & bolt, 2+ pieces of rubber, 2+ pieces of rope, a tin can, 6+ five gallon gas cans, a boot sole, 3+ pieces of cable wire, 6+ oil

filters, an old shirt, a rake, 4+ tractor blade teeth, 9+ unidentified oil cans, 5+ old wooden stakes, 20+ food cans (USDA Commodity food, coffee cans), 2+ old soda bottles ("7-Up You like it; It likes you", "Thrill"), and half of a 50 gal barrel. The debris was basically left untouched by modern times, because of the seclusion of the NAMLRD #49 sequence.

Charles Huskon No. 3 was operated by Rare Metals Corporation and produced 27, 249 tons of uranium ore during 1953-1961. A total of fourteen reports were written on the Charles Huskon No. 1 mine by the USGS Branch of Mines, almost all of which were written by Chas M. McConnell. A report dating May 28, 1958 explains that only three mines are in operation at this point with a fourth beginning to be developed. Radon daughters and gamma rays were re ortedly below work level in the August 18, 1959 report. The August 21st, 19 9 report states that "the mine operating department of Rare Metals terminated their operation in the Cameron area. Mines...have been turned over to Cameron Mining Company for operations by a working agreement." At this point 24 men were involved with mining and all but four of them were Navajo. The 20 Navajo crew workers had made no improvement in wearing hard toed shoes, "which were furnished at cost by the operator," in the report dated December 3, 1959. The crew of 20 Navajo men were reduced by 5 in a report dated March 16, 1960. The last report on this mine was written on September 6, 1962, and no comment was made about Charles Huskon No. 3.

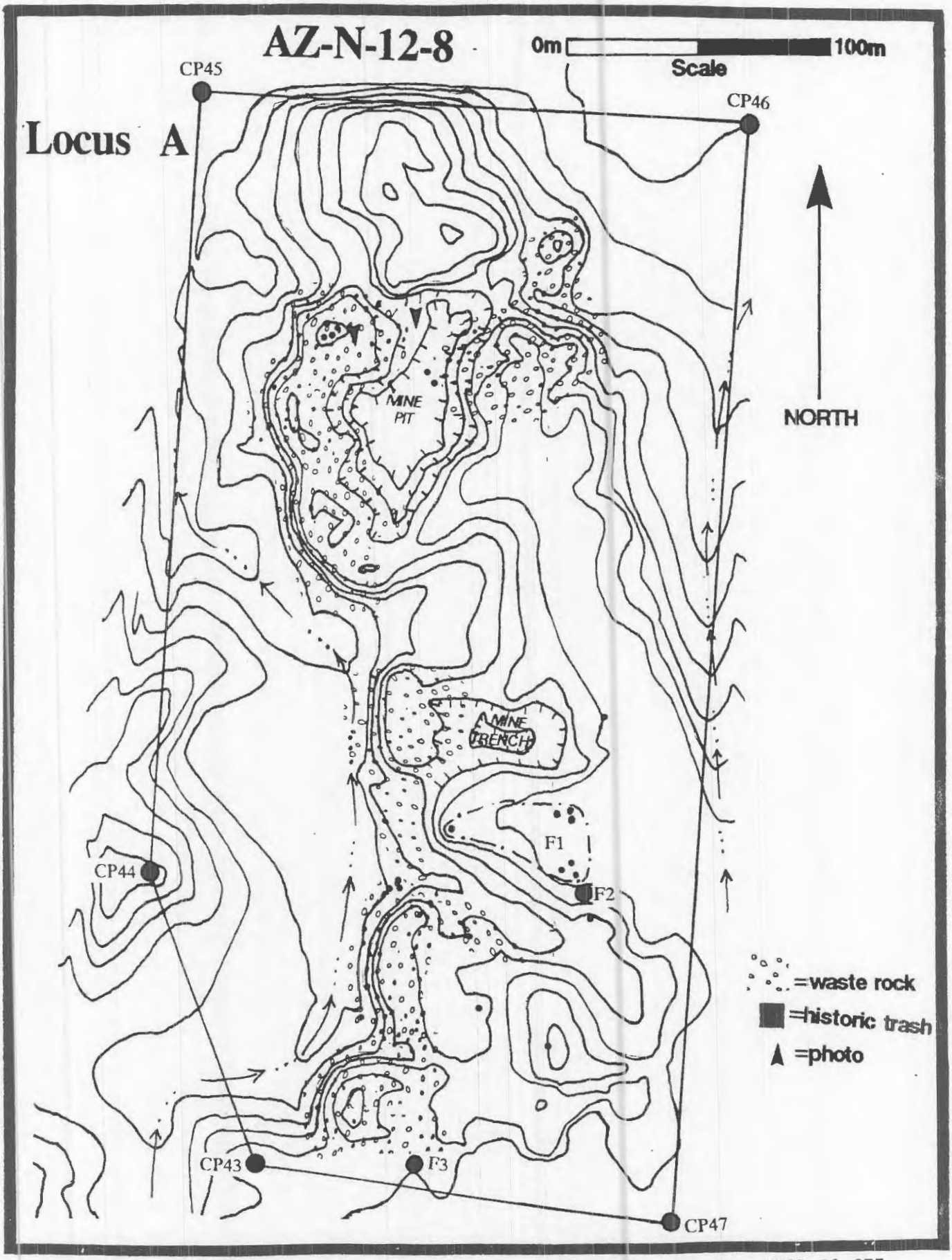


Figure 13a. Map Illustrating AZ-N-12-8 (AMLRD #49) Locus A, NNAD-91-375.

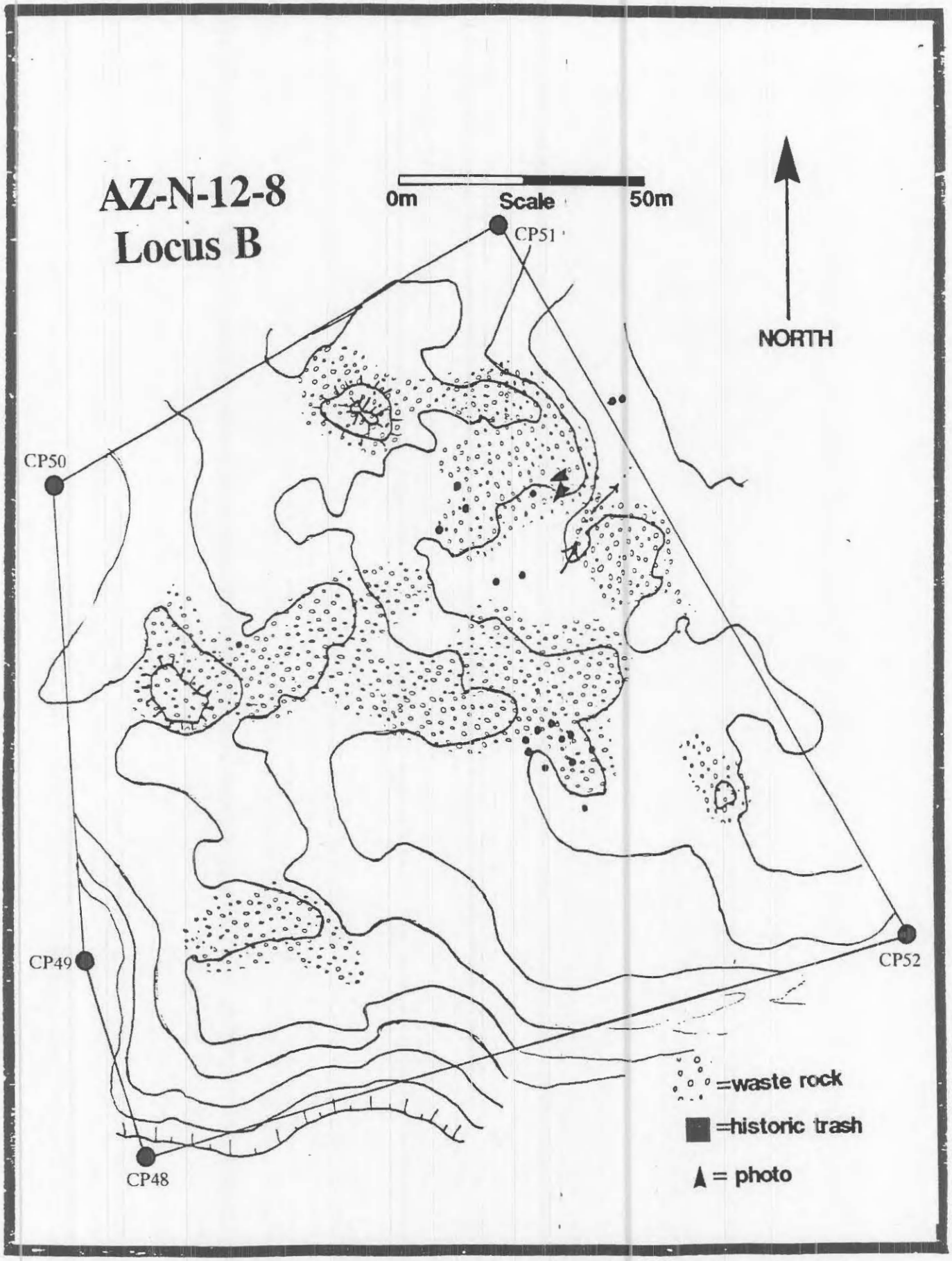


Figure 13b. Map Illustrating AZ-N-12-8 (AMLRD #49) Locus B, NNAD-91-375.

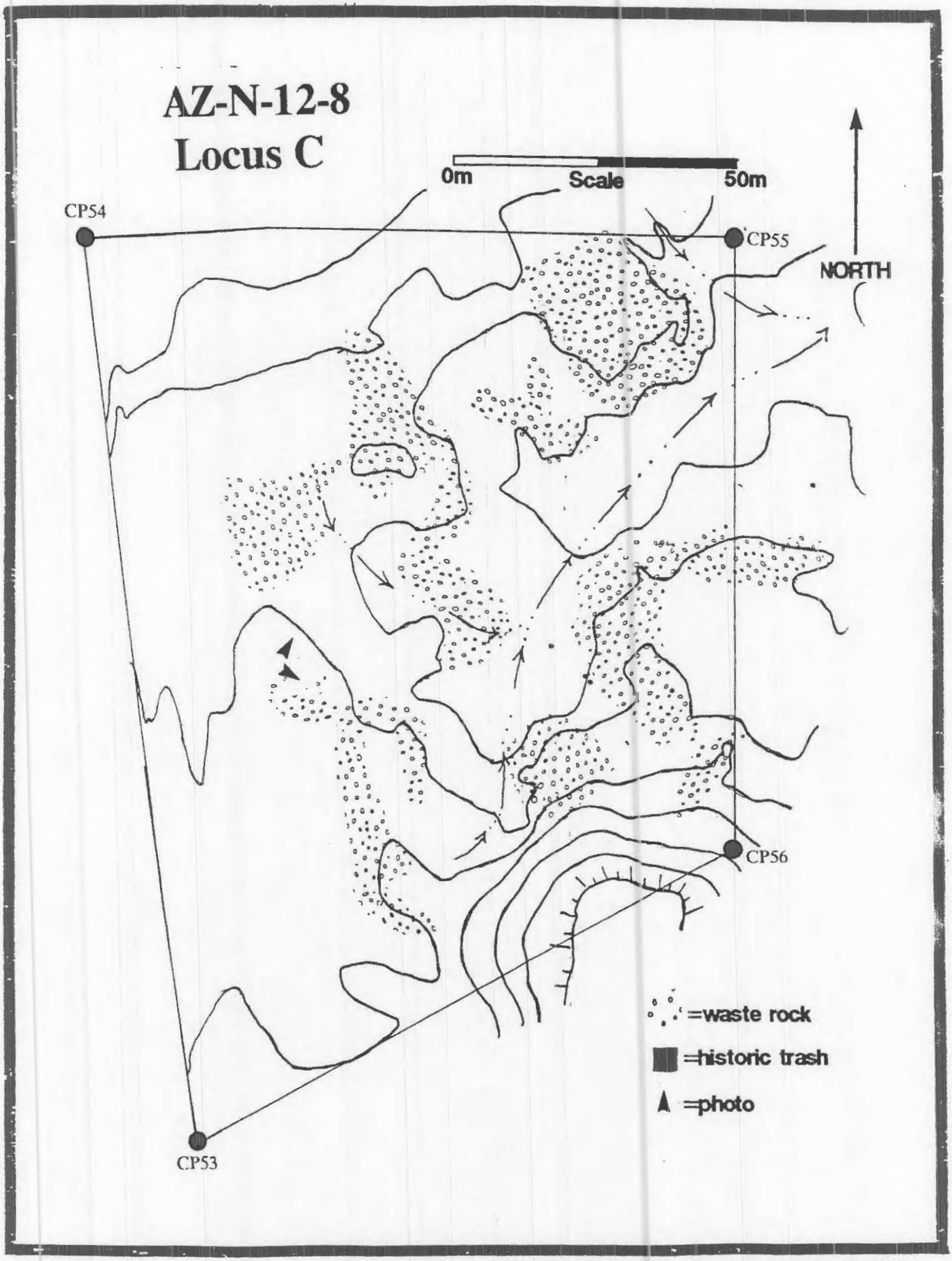


Figure 13c. Map Illustrating AZ-N-12-8 (AMLRD #49), Locus C, NNAD-91-375.

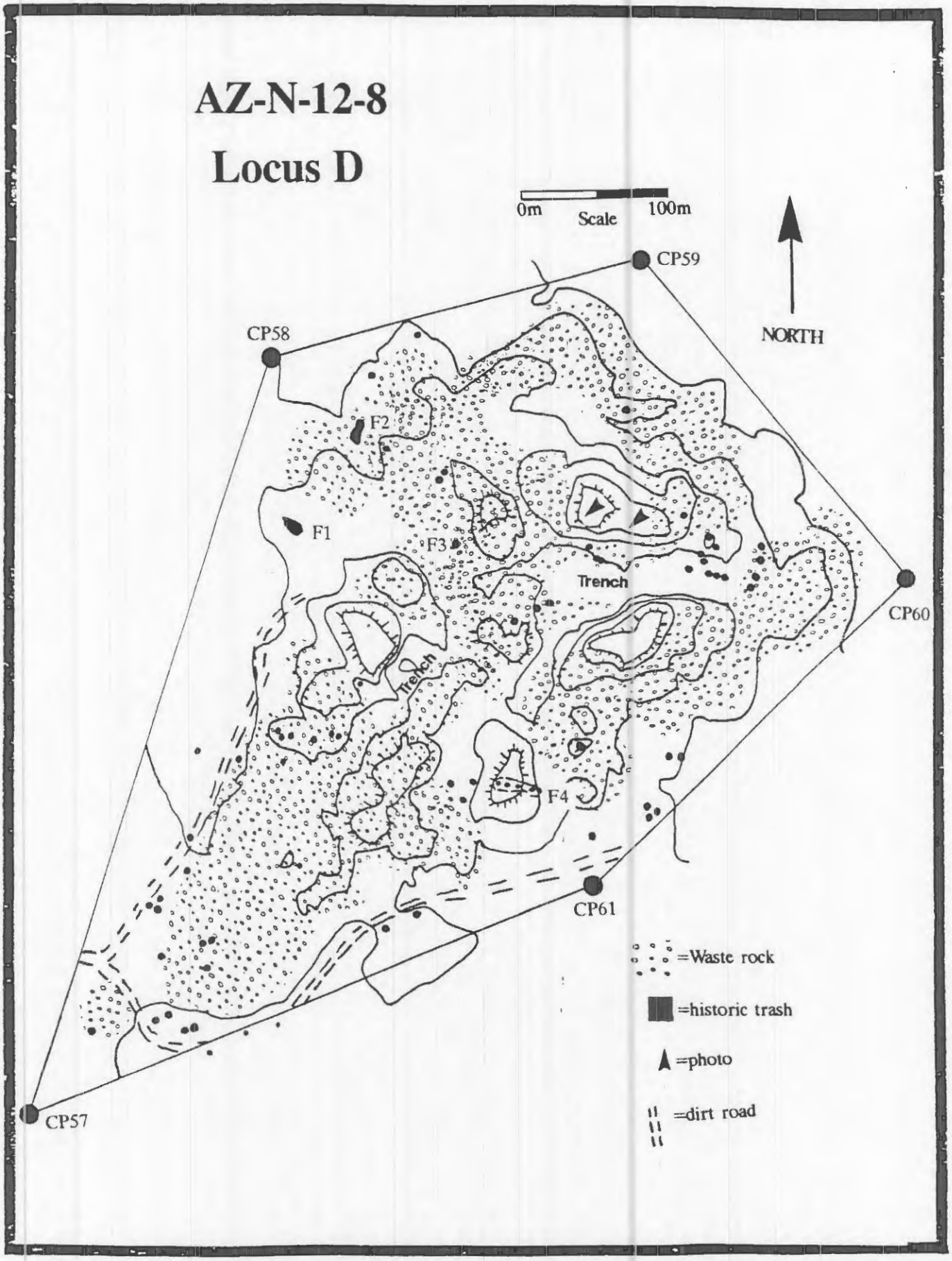


Figure 13d. Map Illustrating AZ-N-12-8 (AMLRD #49) Locus D, NNAD-91-375.

AZ-N-11-9 (Figure 14)

NAMLRD Project Area: #53

Mining Claim: Charles Huskon No. 7 (Mining Permit 65)

Site Type: Uranium ore mine

USGS Map Reference: Cameron SE, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates: CP62: 3961180N 467540E

CP63: 3961360N 467550E

CP64: 3961460N 467580E

CP65: 3961430N 467680E

CP66: 3961280N 467710E

CP67: 3961170N 467700E

Site Size: ca. 270.7m N-S x 175.9m E-W; 47,616.13 sq m

Site Description: At NAMLRD #53 an actual mining pit is absent. Instead hills of the Chinle formation were probably plowed into with heavy machinery. The waste rock and/or protore one observes is more than likely runoff from the bottom southeastern corner of this site, the place of considerable blading and leveling. This particular area is continued in NAMLRD #54, which is located just south this mine site. The waste rock and/or protore spreads along drainages and ultimately to several unnamed ephemeral streams, which drain north into the Little Colorado River.

The trash observed was mostly historic in nature and few and far between. Debris consisted of a hollow metal rod with one solid end, a rusted "Igloo" 5 gal. water container, several wooden stakes, a piece of cable wire protruding from an embankment, and a 1 gal. rusted gas can. Modern trash was absent, since this area is fairly isolated.

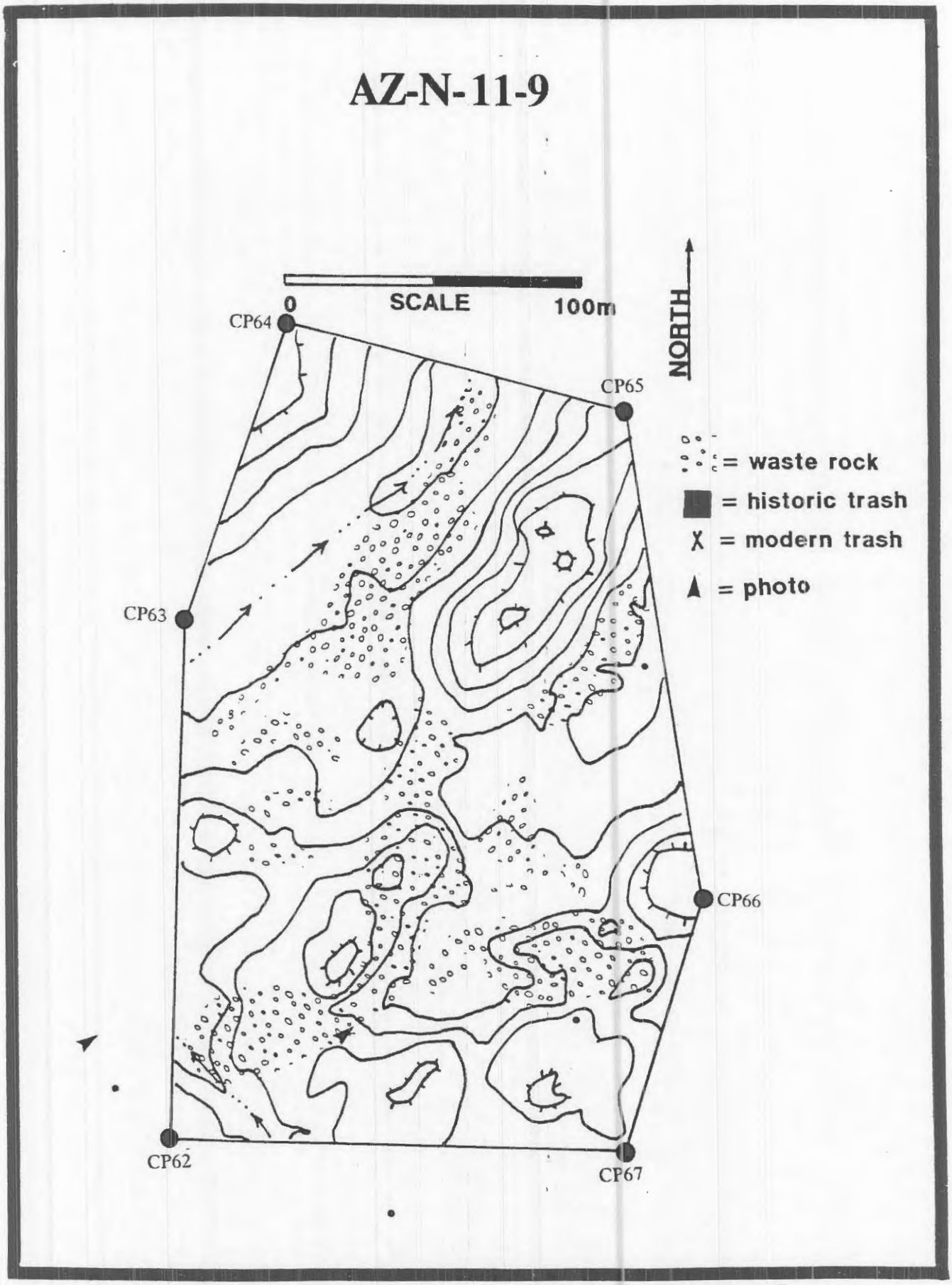


Figure 14. Map Illustrating AZ-N-11-9 (AMLRD #53), NNAD-91-375.

AZ-N-11-10 (Figure 15)

NAMLRD Project Area: #54

Mining Claim: Yazzie No. 102 (Mining Permit 311)

Site Type: Uranium ore open pit mine

USGS Map Reference: Cameron SE, Arizona, 7.5 min, 1988 provisional edition

UTM Coordinates: CP68: 3961000N 467450E

CP69: 3961200N 467470E

CP70: 3961150N 467600E

CP71: 3961100N 467600E

CP72: 3961040N 467580E

Site Size: ca. 191.7m N-S x 163.7m E-W; 31,381.3 sq m

Site Description: This site consists of a mine pit that is 120m long and 52m wide. Most of the waste rock was dumped in piles east of the pit that covers an area roughly 80m x 60m in size and reaches a height of 1.5m in height. Water collects in this mine pit at certain times of the year.

The historic trash scatter includes one feature and a scattering of debris. The historic feature recorded, F1, consisted of 4 rusted cans, a recent 1 gal. gas can, a rusted oil can, a church key opened soda can, and a "Dupont" 1 gal. cylindrical can. The remaining historical trash inventoried includes: 3+ oil cans ("Dupont" and "Mobile"), 2+ small pieces of milled lumber, a wooden stake, a wooden sign post, a 16" six sided piece of drill rod, 2+ pieces of metal, 7+ rusted food cans, and a whole glass bottle ("One Way Beverages"). All of the trash encountered was scattered around the mine pit except for the whole glass bottle, which was located on a Chinle formation hill northeast of the mine pit.

Yazzie No. 102 was mined by Chessher and Company and produced 1,610 tons of uranium ore during 1956-57 and 1960-61.

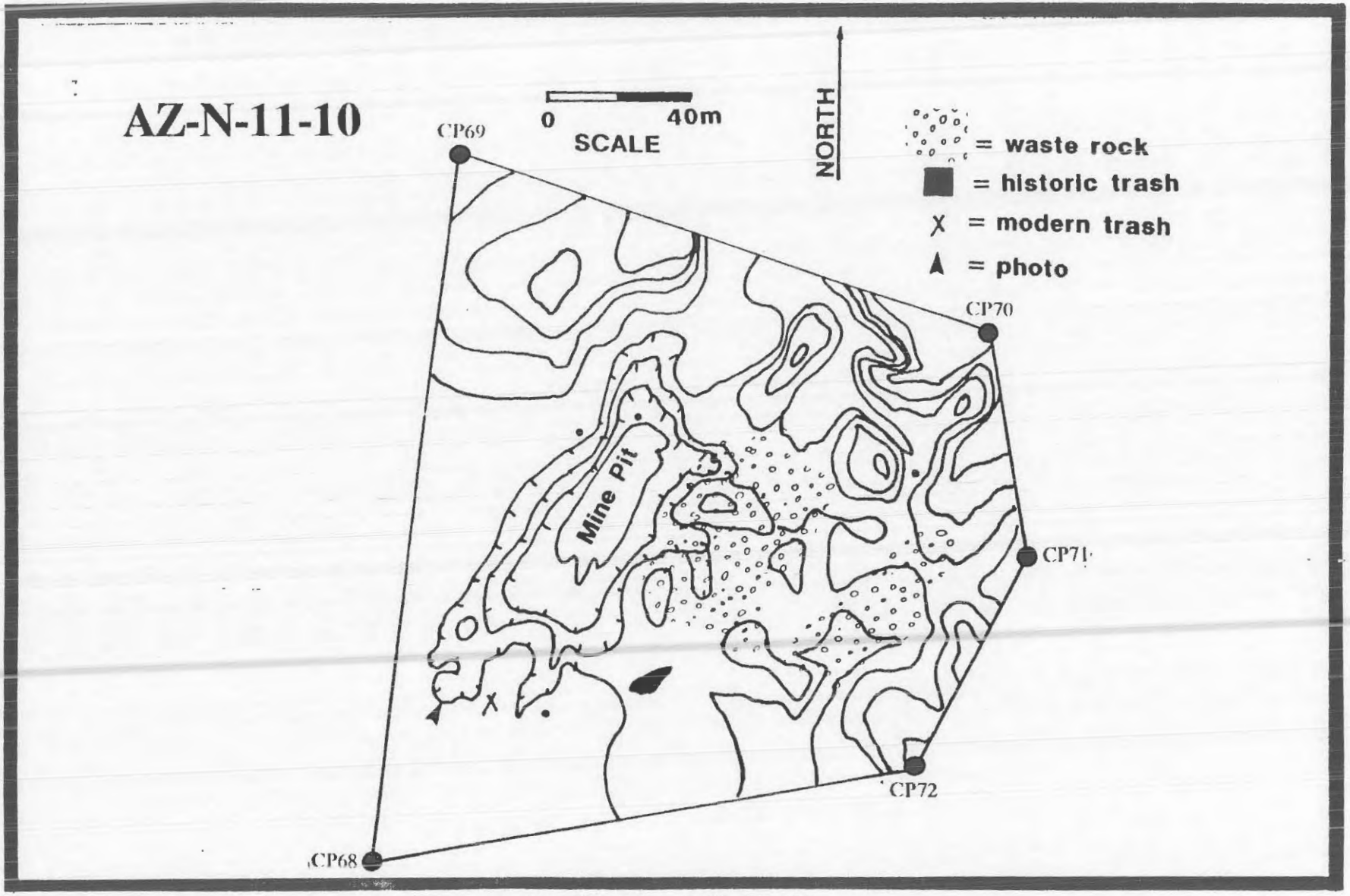


Figure 15. Map Illustrating AZ-N-11-10 (AMLRD #54), NNAD-91-375.

SACRED PLACES

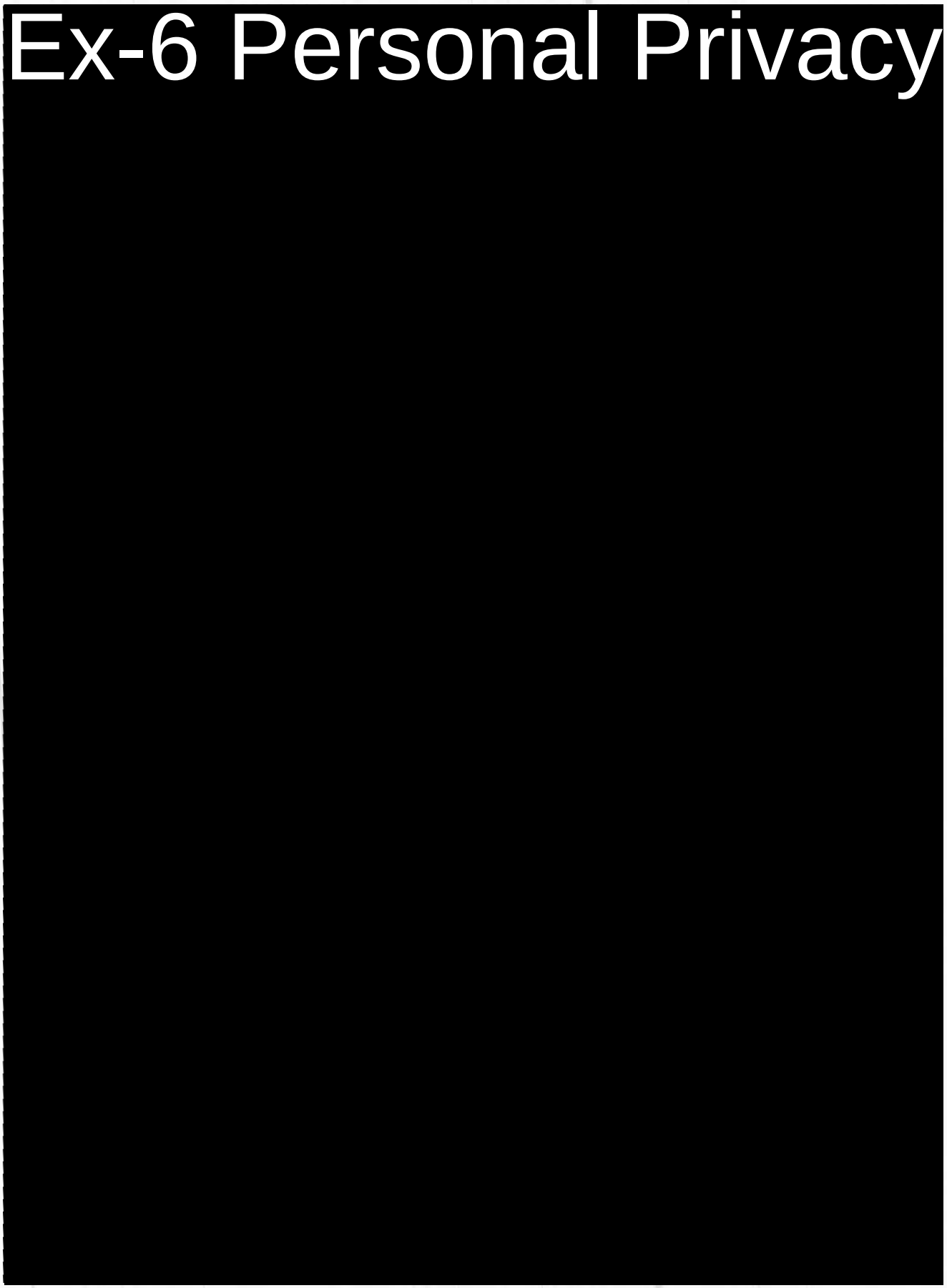
In order to determine the possibility of Traditional Cultural Properties that might be affected by the proposed construction, Grace Morgan of the Navajo Nation Archaeology Department - NAU Branch Office drove throughout the Cameron area and visited the homes closest to the uranium mines. Morgan's first language is Navajo, thus she easily communicated with the "grass roots" people, the Navajo politicians, and Medicine Men, of Cameron, Arizona. She interviewed individuals who have resided in the Cameron area for most of their lives, if not all of their lives, or who had personal knowledge about mining operations. A grand total of 51 residences and a Nazarene Church were visited and representatives of eighteen different families were interviewed in Navajo. Three of the most expressed opinions were: 1) the interviewee was Christian and did not care about TCPs, 2) the interviewee did not know of any TCPs in the project area, 3) the interviewee indicated that the project area was "not being used for anything". Please see Table 3. for a summary of Morgan's interviews.

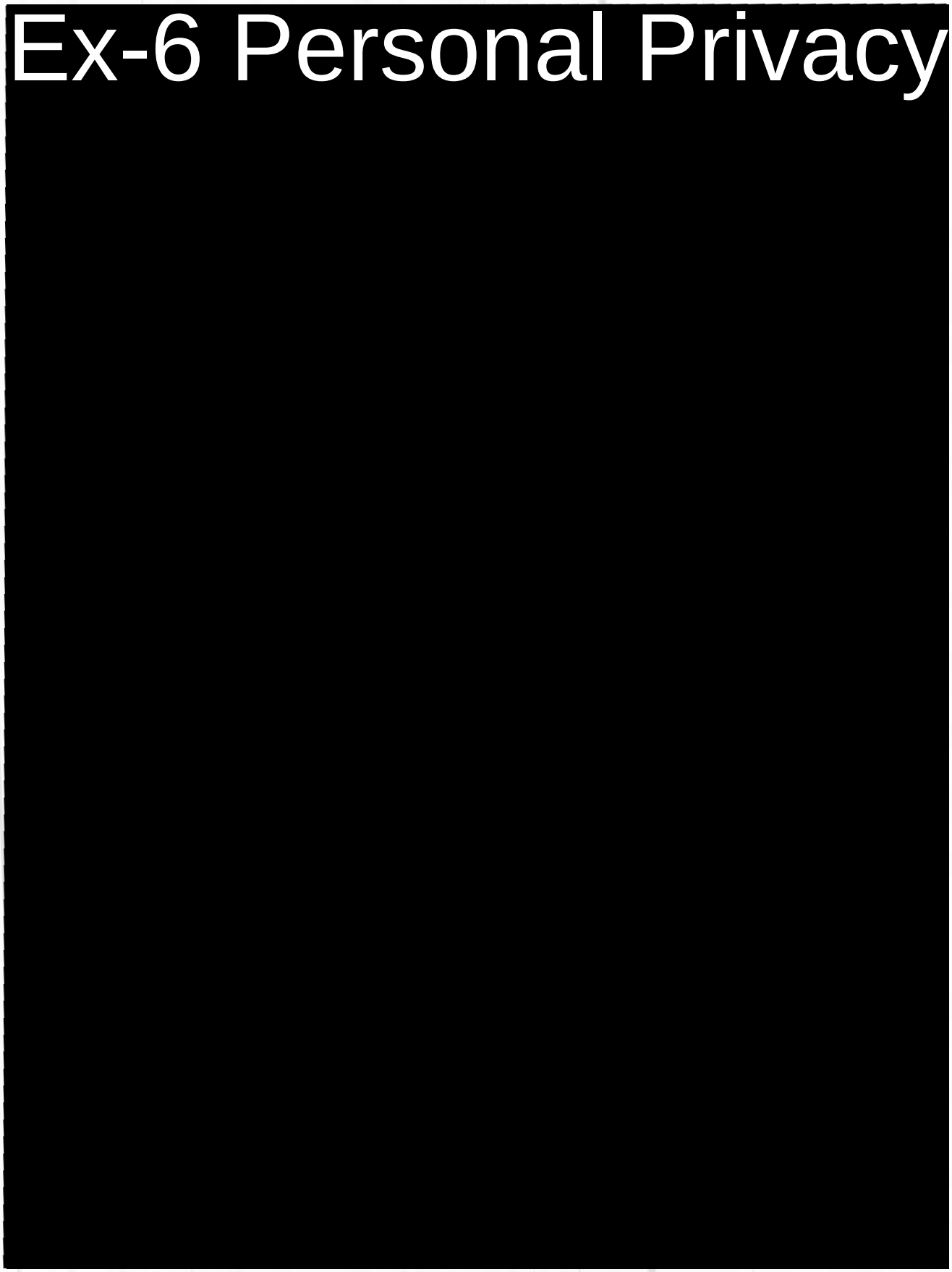
Kurt Dongoske, archaeologist with the Hopi Tribe was also contacted about possible Hopi concerns for TCPs in the project area. Dongoske consulted with representatives of the Hopi Tribe and they were unaware of any Hopi TCPs within a kilometer of the project areas.

CURRENTLY OCCUPIED/IN-USE STRUCTURES & FEATURES

No currently occupied or in-use structures or features occur in or within close proximity to any of the NAMLRD reclamation areas.

Ex-6 Personal Privacy




Ex-6 Personal Privacy


Ex-6 Personal Privacy

SIGNIFICANCE EVALUATIONS

Each of the fifteen archaeological mine sites recorded during this project were evaluated for eligibility to the National Register of Historic Places (NRHP). None of the sites are eligible to the National Register under any criteria and all are less than 50 years old. Lacking scientific interest and being less than 100 years old, none of the eleven project areas are protected under Archaeological Resource Protection Act (ARPA). Furthermore, none of the sites qualify for protection under American Indian Religious Freedom Act (AIRFA), since they do not have religious significance to extant Native Americans.

RECOMMENDATIONS

The proposed reclamation work will not affect significant cultural resources. The uranium ore mine sites are not eligible for nomination to the National Register, do no warrant protection under ARPA and AIRFA. Thus, we recommend that NAMLRD proceed with their proposed reclamation as planned.

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APPENDIX A

SITE FORMS

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-5-4

FIELD OR OTHER NAME: AMLRD #27, Max Johnson No.1

DATE RECORDED: November 21, 1991

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Miranda Warburton, Davina Begaye

USGS 7.5' SERIES MAP REFERENCE: Cameron North, Arizona 1988

LEGAL LOCATION: T29N, R9E (Projected) Unplatted.

UTM ZONE: 12,

CP1: 3970390N 464680E
CP2: 3970530N 464640E
CP3: 3970670N 464770E
CP4: 3970660N 464840E
CP5: 3970510N 464860E
CP6: 3970380N 464770E

STATE: Arizona

COUNTY: Coconino

CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands north of the Little Colorado River

DRAINAGE: Unnamed Ephemeral Stream 400m north

ELEVATION (FT/M): 4,120ft. (1,283.2m) Slope and Direction: Variable

SOIL TYPE: Tolchaco gravels cover at least 500m in every direction and overlay residual and fluvial silt and sand.

OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Prickly Pear, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo

SITE TYPE: Uranium open pit mine

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s

HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w): ca. 288m N-S x 210m E-W

Total Area (sq. m): 60,480 sq m

How Determined: Compass and metric tape

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description".

COLLECTION MADE? No OF WHAT? N/A METHOD: N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION: This site consists of a long relatively shallow open pit mine in the Petrified Forest Member of the Chinle Formation. The cut is oriented NE-S, and exhibits an opening toward the north, which was the ramp access into the pit. The pit measures about 171.5m long x 51.8m at its widest, and up to 3.7m deep. Water is ponded here for parts of the year, and is a source of water for local livestock. An eroded pile of waste rock and/or protore borders the northwestern edge of the pit and rises about 1.8m above the ground surface, while small piles of waste rock and/or protore dot the southeastern edge of the pit and rise about 0.9m above the ground surface.

Concentrated historic trash scatters, a result of mining operations, are located at the beginning of the access road north of the pit (F1), and immediately west (F2) of the access road before it enters the pit. The most northern historic trash scatter, F1, covers an area roughly 5m E-W x 15m N-S and includes a church-key opened oil can, 12+ food cans, a 1 gal. gas can, a glass bottle, a piece of rubber hosing, 15+ big pieces of various machine and engine parts, and soda bottles ("Dr. Pepper" and "7-Up"). F2, which lies immediately west of the access road before entering the pit, exhibits another activity area associated with the mine and includes the following artifacts: a couple of window frames for a car and/or truck, clear broken glass pieces (some from wine bottles), a soda bottle ("Hines"), 27+ food/liquid (sardines, juice) cans, pieces of a Euro-American bowl with flowers painted on it, an oil filter, a carburetor, 10+ machine and engine parts, 4+ rusted rods, 15cm-50cm in length, and one whole glass bottle. Most of the cans are squashed flat and are rusted. Both trash scatters appear to have been areas for lunch and for mechanics to work on their machinery.

In general historic trash can be found all around this mine pit as well as modern trash. Historic trash observed in and around the mine pit included: 6+ rusted food/juice cans, 2+ machine and engine parts, 6+ 1 gal.gas cans, a 5 gal. gas can, 6+ bimetal Budwieser cans, a bullet ("Western 38 Special"), winch wire, a rusted can ("RHEEM MFGH, MADE IN U.S.A., ON THE, PACIFIC COAST, 24 5 48, ICC-60-20, STP, PATENTED JUNE 1923"), and a shovel rod.

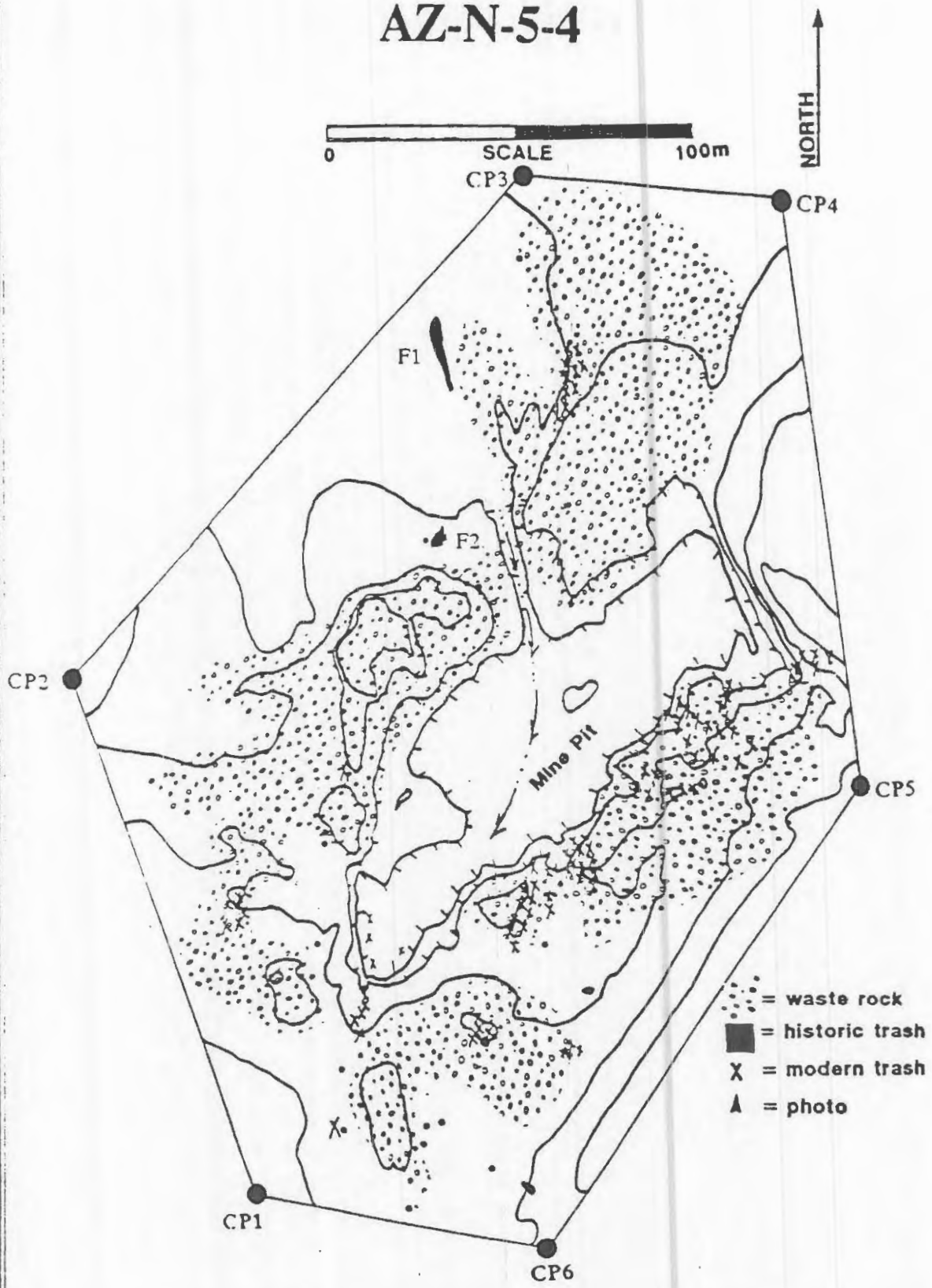
Modern trash represents the use of this uranium mine pit today as a "party" area for Cameron residents. It has become the perfect rendezvous for socializing in the form of alcoholic drinking. Thus, the predominant modern trash recorded was at least 90+ beer cans ("Budwieser", "Coors", are predominant), shattered glass liquor bottles, and seven 12 pack cardboard beer cartons. Six soda cans, a couple of plastic bags, 2+ Pennzoil bottles, scattered styrofoam, 3+ oil cans, a 5 gal. plastic bucket, and a bullet make up the remaining observed modern trash.

CONDITION OF SITE: Poor Causes of disturbance: Erosion and littering

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

AZ-N-5-4


NORTH
0
SCALE
100m
CP3
CP4
F1
F2
CP2
Mine Pit
CP5
CP1
CP6
= waste rock
= historic trash
X = modern trash
= photo

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-5-5

FIELD OR OTHER NAME: AMLRD #28 (Locus A, LocusB), Lemuel Littleman No.2

DATE RECORDED: A=Nov. 13th, 1991 B=Jan. 22, 1992

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Miranda Warburton, Davina Begaye, Nathan Lefthand

USGS 7.5' SERIES MAP REFERENCE: Cameron North, Arizona 1988

LEGAL LOCATION: T29N, R9E (Projected) Unplatted.

UTM ZONE:

Mine Pit A:
CP7: 3970500N 464880E
CP8: 3970680N 464920E
CP9: 3970590N 465090E
CP10: 3970480N 464920E

Mine Pit B:
CP11: 3970380N 465270E
CP12: 3970580N 465280E
CP13: 3970520N 465360E
CP14: 3970460N 465400E
CP15: 3970340N 465340E

STATE: Arizona

COUNTY: Coconino

CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands with Chinle Formation hills north of the Little Colorado River

DRAINAGE: A=Unnamed Ephemeral Stream 440m (1,443.2ft.) north
B=Unnamed Ephemeral Stream 500m (1,640ft.) east

ELEVATION (FT/M):
A=4,207.5ft (1,282.5m)
B=4,180 ft (1,2740m)

Slope and Direction: A=Variable B=Variable

SOIL TYPE: Tolchaco gravels cover residual and fluvial silt and sand around both mines.

OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Prickly Pear, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo

SITE TYPE: A=Uranium open pit mine
B=Uranium open pit mine

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s

HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w):
A = ca. 163.6 SW-NE x 111.4m NW-SE
B= ca. 118.04m E-W x 200.39m N-S

Total Area (sq. m):
A=18,225.04 sq m
B=23,654.04 sq m

How Determined: Compass and metric tape

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description" below.

COLLECTION MADE? No OF WHAT? N/A METHOD: N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION: This site consists of two adjacent small open pit mines cut into the Petrified Forest Member of the Chinle Formation. Mine pit A is another shallow mine pit measuring 72.7m SW-NE x 20.5m E-Wx at its' widest and 2.1m deep. It is oriented southwest curving gently to the northeast towards the point of access. Water erosion has cut its way into the the north side and/or edge of the mine, thus, water collects within the mine pit at certain times of the year becoming a source of water for livestock.

Waste rock and/or protore piles measuring about 1.8m above ground level border the edges of the mine pit. Directly north of this area is F1, a 1m in diameter circle which includes the following: a scatter of 26+ food/juice/coffee cans, several glass jars of jelly, a couple of spam cans, and a shoe sole. By the amount of food/juice/coffee cans, etc. present, it is likely that this area was the lunch area for the Navajo uranium miners of 30 years ago. F2 is triangular in shape with each side measuring approximately 11m long. Within this triangle can be found 10+ squashed tin cans, cardboard filters of some sort, a couple of oil filters, an old working glove, and a piece of winch wire. F3 consists of nine rusted iron drill rods, all of which are aligned north to south in a single row and protrude about .5m out of the ground.

Historic trash is scattered in and around this mine and includes the common debris: three 5 gal. gas cans, glass food and liquid bottles ("Pepsi" and "Coke"), 10+ rusted food/juice (some most likely commodity foods)/coffee cans, pieces of iron, a battery, and an oil can (''Prestone").

Since AML#28A and AML#27 are located adjacent to one another, it is of no surprise that scattered in and around AML 28A mine are more beer cans, a 12 pack case, a cardboard box, a tobacco lid, and one Pennzoil bottle, all of which make up the modern trash.

Mine pit 28B consists of a total of five trenched areas surrounded by small piles of waste rock and/or protore. The first three trenched areas lie along the eastern edge of a Chinle formation relatively flat outcrop that is aligned north to south. The outcrop bends to the east and turns into small hills, at which point can be found the last two trenched areas. Ponded water was available in all but the most northern trenched area. The water was being used by local coyotes.

Both historic and modern trash were to be found at this mine site. The historic trash included a 5 gal. gas can, a large drill bit, and three rusty food cans that are possibly associated with the mine. The rest of the trash is modern and most likely blown-in from a nearby land-fill and from the trash scatter feature. The only feature, F1 measures 5m N-S x 1.5m E-W and consists of 200+

rusty cans ("Spam" & commodity food), 10+ Yellow Penzoil Bottles, a Michelob case box, 8+ milled lumber, a turquoise chair, a wooden ladder, 50+ glass bottles and jars (jam, coffee), 20+ tar paper pieces, plastic bottles ("Joy", "Chlorox"), and a shoe. Obviously, the locals began to dump their trash at this mine, but stopped after a couple of trips.

The rest of the mine site is scattered with modern trash. Trash has also collected in each of the trenched areas along with the ponded water. The modern trash encountered and recorded were the following: 16+ cardboard pieces, a chlorine bottle, 20+ beer cans ("Coors", "Michelob", "Budweiser"), an old green shirt, 5+ rusted food cans, a glass jar, a plastic bottle, 2 rubber tires, 2+ spray cans, and a piece of sheet metal.

CONDITION OF SITE: Poor Causes of disturbance: Erosion and littering

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

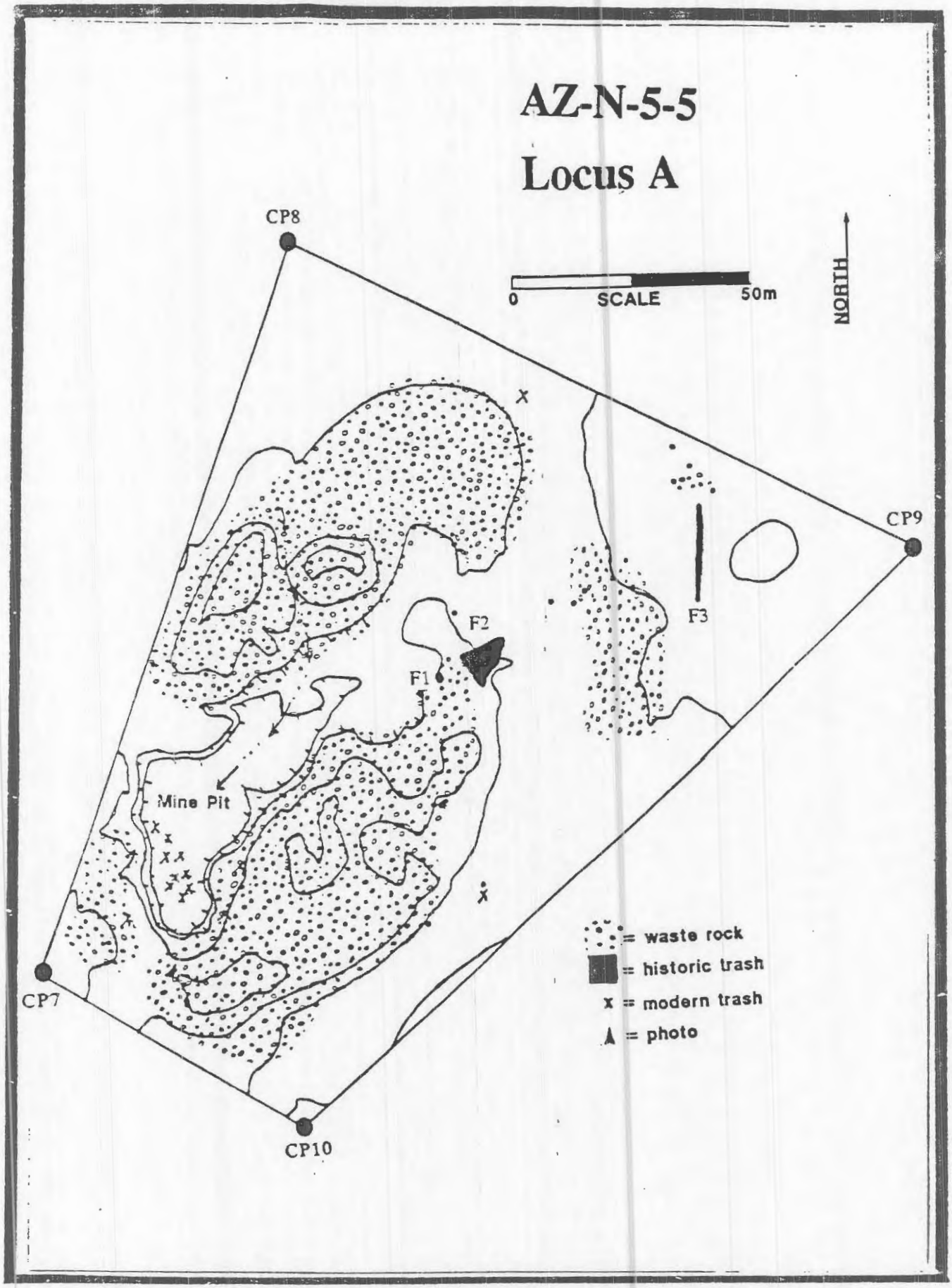
SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

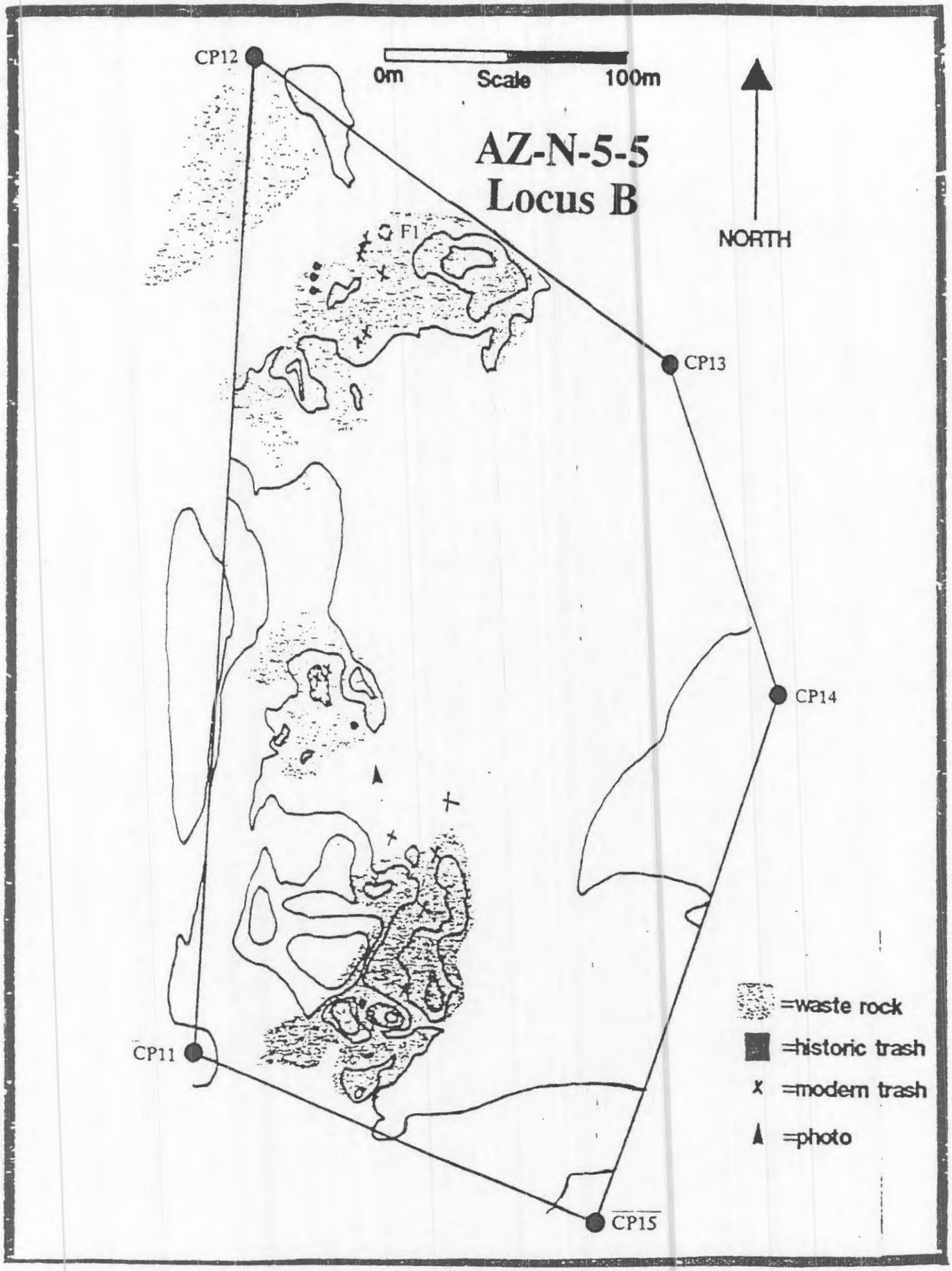
SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Historical information on 28A and 28B is scarce. However, they were mined by the Diamond Uranium Corporation and produced 5,819 tons of uranium ore between 1955-60.


AZ-N-5-5
Locus A
CP8
CP9
CP7
CP10
0
SCALE
50m
NORTH
F1
F2
F3
Mine Pit
= waste rock
= historic trash
x = modern trash
= photo


CP12
0m
Scale
100m
AZ-N-5-5
Locus B
NORTH
F1
CP13
CP14
CP11
CP15
=waste rock
=historic trash
=modern trash
=photo

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-5-6

FIELD OR OTHER NAME: AMLRD #29, Charles Huskon No.1

DATE RECORDED: January 22, 1992

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Davina Begaye, Nathan Lefthand

USGS 7.5' SERIES MAP REFERENCE: Cameron North, Arizona 1988

LEGAL LOCATION: T29N, R9E (Projected) Unplatted.

UTM ZONE: 12,
CP16: 3970040N, 465510E
CP17: 3970240N, 465520E
CP18: 3970300N, 465560E
CP19: 3970350N, 465700E
CP20: 3970240N, 465740E
CP21: 3970100N, 465720E

STATE: Arizona

COUNTY: Coconino

CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility

Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Chinle formation hills north of the Little Colorado River

DRAINAGE: Little Colorado River is 700m southwest.

ELEVATION (FT/M): 4,228 ft. (1,289m)

Slope and Direction: Variable

SOIL TYPE: Residual and fluvial sand and silt.with an overlay of mica particles and Tolchaco gravels.

OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Prickly Pear, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo

SITE TYPE: Uranium open pit mine

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s

HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w): ca. 277.8m N-S x 230.2m E-W

Total Area (sq. m): 63,949.6 sq ft

How Determined: Compass and metric tape

Continaution of AMLRD #29 Site Form, 91-375

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description" below.

COLLECTION MADE? No OF WHAT? N/A METHOD: N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION This mine site consists of extremely large Chinle formation greenish yellow hills which have been trenched and bladed for uranium. These sparkling hills exhibit bits and pieces of gypsum. Perhaps because of this mine site's proximity and visibility to State Highway 89, and major dirt roads, it has become quite the recreational area. Not only is NAMLRD #29 a choice partying area, evidenced by numerous beer cans/bottles and wine/whisky bottles, but it is also the local target practice and ATV park. The uranium waste rock and/or protore piles, serve as the perfect obstacle course for Cameron's ATV riders. All of the waste rock and/or protore piles exhibit tire tracks.

The mine site contains a main access road, which cuts into the mine from the southwest and bends abruptly south at which point the access road ends. This area is well hidden from view and contains the first three features encountered. None of the features are historic. The only historic trash recorded includes the following scattered in and about NAMLRD #29: 14+ commodity food cans, an old machine part, a wooden stake, and a 5 gal. water container. The rest of the trash is modern.

A total of seven features were encountered and recorded at NAMLRD #29. The first feature, F1, measures 19.8m E-W x 15.9m N-S and consists two recent ash stains associated with the remnants of 7+ burned tires or wire (.5m in diameter), and a modern sandstone hearth (.5m x .5m) with associated wood and lighter fluid. The second feature, F2, measures 8m in diameter and includes an old rusted bed spring, a scattering of unidentified of animal bones, an old transistor radio tube, thick 4cm pieces of purplish glass, a "Budweiser" can, and various machine parts. F3, measures 31.7m N-S x 23.8m E-W and consists mostly of a scattering of glass sherds derived from green, brown, and clear liquor bottles. One ash stain, an oil filter, 30+ beer cans and bottles, 20+ cinder block pieces, and one engine filter make up the remaining modern trash identified at this feature. The fourth feature, F4, is located out and east of the hidden trenched area. F4 is situated on the eastern side of this mine site measuring 15.9m N-S x 11.9m N-S and includes 20+ "Budweiser" bottles, an empty propane tank, 10+ rope pieces, a cup, a carburetor filter, a muffler, and a seat belt. F5, is 7.94m N-S x 15.9m E-W and is situated within a water drainage. The modern trash in F5 includes 15+ "Budweiser" cans/bottles, a dense scatter of green, brown, and clear glass, a "Thunderbird" whisky bottle, a "Pennzoil" bottle, and a piece of sheet metal. F6 and F7 both measure 6m in diameter. F6 is an ash stain associated with the remnants of 15+ burned tires or rusted wire bundles. F7 consists of 25+ 30/30 "Winchester" bullet shells. As stated, NAMLRD #29 is frequently utilized by the public as illustrated by the seven features recorded and the remaining modern trash.

The modern trash reflects the trash found in the features. That is, most of the trash consists of beer cans and bottles. NAMLRD #29 exhibited trash throughout its' borders. The trash included the following: 30+ beer cans ("Budweiser", "Coors"), 11+ beer bottles ("Budweiser", "Coors"), 8+ "Thunderbird" bottles, 3+ 12 pk. cases ("Michelob", "Coors"), 3+ glass sherd scatters, 5+ milled lumber 2" x 4" boards, "Valvoline Oil", 10+ burned tire remnants or rusted wire bundles, an orange juice can, "Octane Boost", wooden lamp base, "Penzoil", rubber tubing (1 1/2" in diameter), 2+ 1ft. long propane tanks, 2+ bolts, 2+

pieces of metal, a pair of "Wranglers", a child's sweat pants, a "Vaseline Intensive Care" lotion bottle, a piece of sheet metal, a bedspring, a 4ft long garden hose, an Easter basket, a plastic cup, a piece of carpet, 4+ plywood panels, 3+ food glass bottles, a cardboard box, a doll's bottle, a kerosene can, and a tissue paper box. This mine has obviously been thoroughly utilized by the local community of Cameron, Arizona.

CONDITION OF SITE: Poor Causes of disturbance: Erosion, ATVs, and littering

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

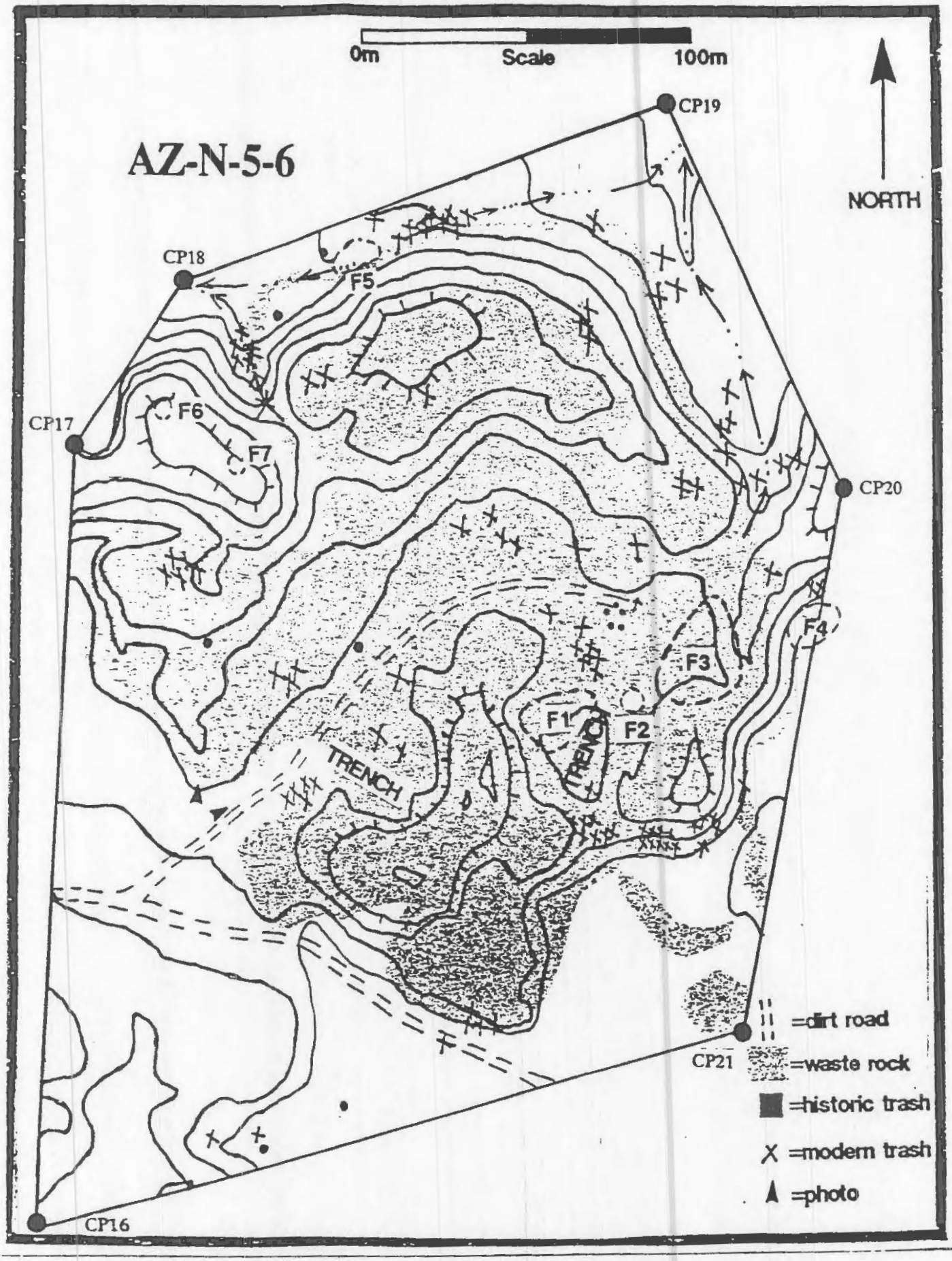
SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Charles Huskon No. 1 was one of the most significant Cameron area mines, since it produced approximately 23,127 tons of uranium ore between 1951-1961 through the Rare Metals Corporation. Eleven reports by Chas M. McConnell were consulted about this particular mine. The first dates May 28, 1957. Stripping operations were conducted by the Bonner and Hall Construction Company with Mr. J.C. McFarlane in charge at this time. Twenty-five Navajo workers were under his supervision working 5 1/2 days a week. The second report dates April 9, 1958. Stripping operations were conducted by the Isabel Construction Company with John Wright in charge. Mining operations were conducted by the Rare Metals Corporation with J.C. McFarlane as mine supervisor. The ore mined from this pit was from within "low buttes" measuring 1 foot to 15 feet thick. The ore itself measured 1 foot to 5 foot thick .

Apparently, the ore from this pit was of a higher grade than most in the district for awhile. Also mentioned in this report was the merger between the Arrowhead Uranium Company and the Rare Metals Corporation on December 31, 1956. The third report dates March 24, 1959 and states "Huskon No.1 mine...produced 174 tons of 0.19% U_3O_8 ore in July 1958, and there has been no production since that date." The fourth report dates August 21, 1959 and outlines the termination of Rare Metals and the subsequent turn over to the Cameron Mining Company. Partnerships with the Steinberger Drilling Company with Page Blakemore in charge was discussed. A fifth report dating December 3, 1959 explains that 151 tons of 0.165% U_3O_8 ore was produced since July 1, 1959. The sixth report is brief and dates February 7, 1960. It mentions that "34 tons of 0.22% ore was shipped from Huskon No.1." A seventh report mentions that the crew numbers 15 men, and that "Huskon No.1...has produced 22 tons of 0.21 percent U_3O_8 ore since the last examination." The eighth report June 16, 1960, notes that twenty-two tons of 0.20% U_3O_8 ore were mined in February 1960, and that no further work has been done. The ninth report dates November 3, 1960 and notes that mining is performed by the Cameron Mining Company with P. Blakemore in charge. The Bureau of Mines concluded that "dust and radiation hazards" do not exist in any of the mines. The tenth report dates May 10, 1961 and notes that a change in organization of the Cameron Mining Company has "brought out the interests of the Steinberger Drilling Company," and Mr. George Bastedo has been placed in charge of operations at Cameron." The eleventh and final report dates August 15, 1961 and states that Huskon No. 1 "has not been operated since the date of the last inspection."


0m
Scale
100m
NORTH
AZ-N-5-6
CP16
CP17
CP18
CP19
CP20
CP21
F1
F2
F3
F4
F5
F6
F7
TRENCH
TRENCH
=dirt road
=waste rock
=historic trash
=modern trash
=photo

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description" below.

COLLECTION MADE? No OF WHAT? N/A METHOD: N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION: This site is basically a platform which is a result of blading a small terrace with a rounded end. The rounded end of this Chinle formation linear outcrop was bladed for uranium. The rounded end exhibits small trenched areas to the east and the west. Water flows along the western edge of the platform and proceeds south to the Little Colorado River. This mine site is probably the smallest of the eleven and contains minimal trash. Historic debris includes a 1 gal. gas can and a rusty food can. Modern trash consists of a cardboard box, a soda can, and a glass bottle (rum).

CONDITION OF SITE: Poor Causes of disturbance: Erosion and littering

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

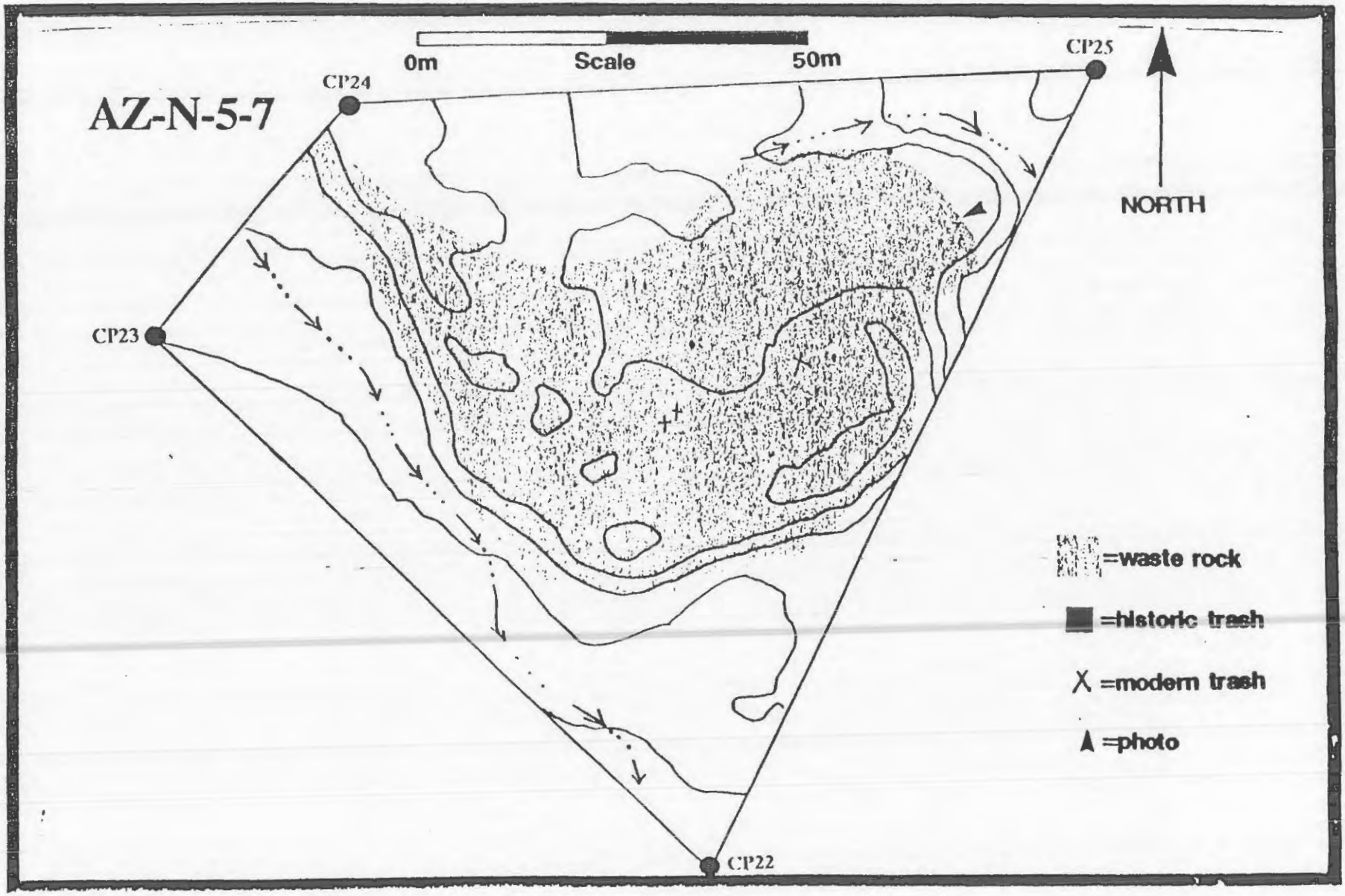
SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Historical information concerning this mine is scarce. However, Max Johnson No. 10 was operated by the Rare Metals Corporation and produced 196 tons of uranium ore between 1950-1960.


AZ-N-5-7
0m
Scale
50m
CP24
CP25
CP23
CP22
NORTH
=waste rock
=historic trash
=modern trash
=photo

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-11-3

FIELD OR OTHER NAME: AMLRD #35, Evans Huskon No.2

DATE RECORDED: November 21, 1991

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Miranda Warburton, Davina Begaye

USGS 7.5' SERIES MAP REFERENCE: Cameron South, Arizona 1988
Cameron SE, Arizona 1988

LEGAL LOCATION: T29N, R10E (Projected) Unplatted.

UTM ZONE: 12,

CP26: 3969620N 466160E
CP27: 3969790N 466100E
CP28: 3969840N 466180E
CP29: 3969760N 466370E

STATE: Arizona

COUNTY: Coconino

CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility

Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands north of the Little Colorado River

DRAINAGE: Unnamed Ephemeral Stream 20m south

ELEVATION (FT/M): 4,158.5 ft. (1,267.8m)

Slope and Direction: Variable

SOIL TYPE: Residual and fluvial silt and sand

OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Camel Thorn, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo

SITE TYPE: Uranium open pit mine

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s

HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w): ca. 215m N-S x 255.8m E-W

Total Area (sq. m): 54,997 sq m.

How Determined: Compass and metric tape

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description" below.

COLLECTION MADE? No OF WHAT? N/A METHOD: N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION: This site consists of waste rock and/or protore piles formed in a circular shape with two openings to the east. The whole of this roughly circular area, which makes up the AML#35 mine measures, 162.8m N-S x 122m E-W.with the waste rock and/or protore piles measuring 1-5m above ground level. AML#35's piles of waste rock are probably a result of bulldozing whole Chinle formation hills or mounds to reach the uranium within, thus creating piles both very small and large of waste rock and/or protore.

Both historic and modern trash can be found all around this area. Historic trash is scarce but, consists of a bimetal pop can, 13+ rusted commodity food/juice cans, various engine parts, glass bottles, scattered milled lumber, and an old WD-40 spray can. This area was also utilized for socializing in the form of alcoholic drinking, as modern shattered glass is highly concentrated to the east and north of the waste rock piles. Fifteen glass bottles ("Gatorade" and 1 "Barqs's Rootbeer") were recorded to the south of the piles along with a baby's bottle. Inside the circle to the south, a recent oil changing scene consisted of 5 Penzoil yellow plastic containers, a 1 qt. oil bottle, one WD-40 spray bottle, an oil filter, and lastly, a recent oil stain.

CONDITION OF SITE: Poor Causes of disturbance: Erosion and littering

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

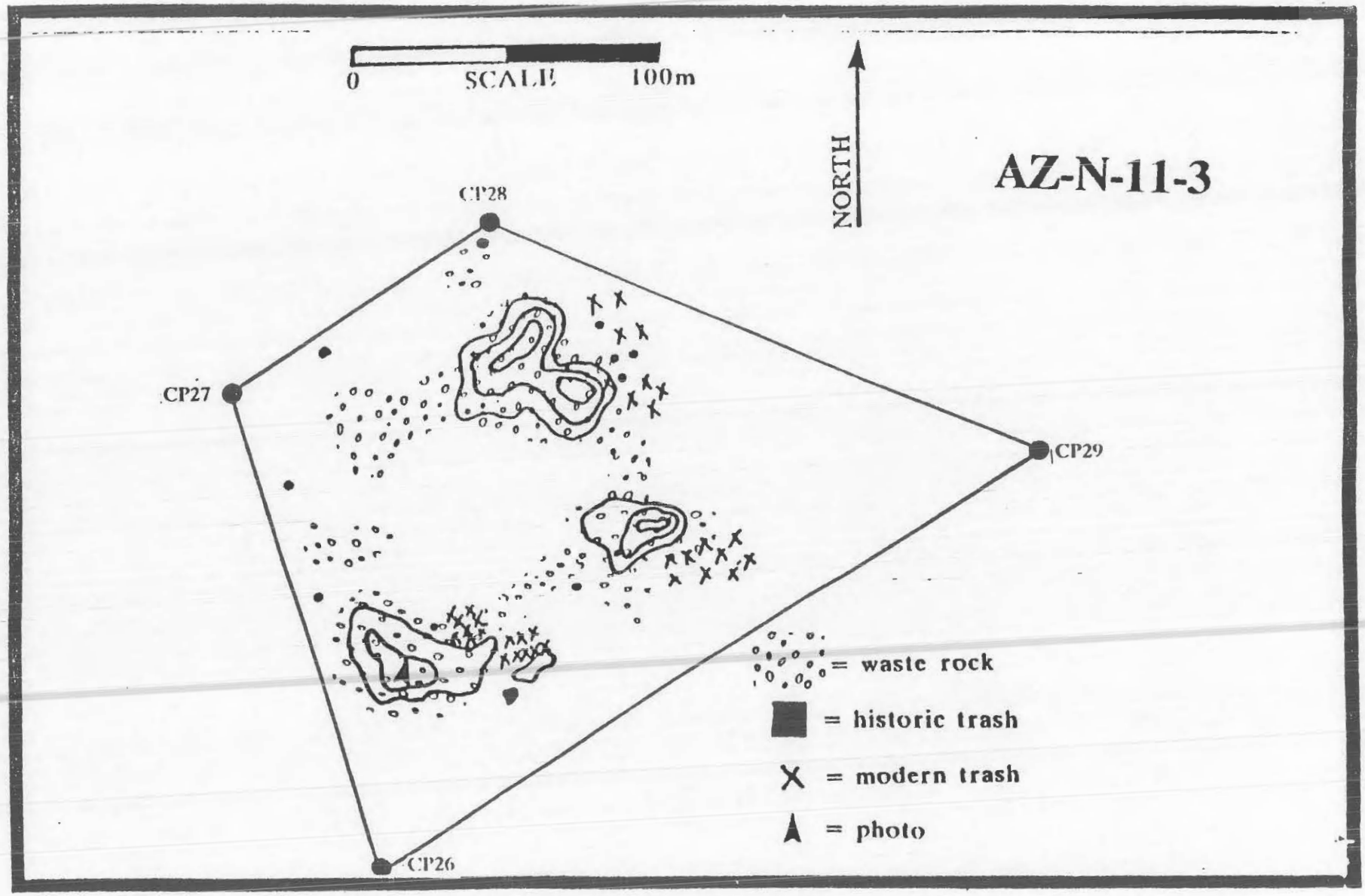
SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Evans Huskon No. 2 produced approximately 1,853 tons of uranium ore in 1957. One report by Boyd Bywater and nine reports by Chas M. McConnell were made for Evans Huskon No. 2. A report dating May 10, 1961 mentions that "California interests headed by Dr. Donald Wenson has bought out the interests of the Stienberger Drilling [company] and Mr. George Bastedo has been placed in charge of operations at Cameron." This report also states that the mine has been sublet to Winford Jones. The next report dating August 15, 1961 mentions that Page Blakemore was the General Manager of the Cameron Mining Company, the company in charge of mining operations. And, the latest report dates July 28, 1964 and mentions that the lease formally held by El Paso Natural Gas has been transferred to Rare Metals Cooperation of America and that this mine was ready for abandonment.

A Mining Health and Safety Engineer, Mr. L.G. Anderson, of Rare Metals Cooperation of America conducted his observations in order to identify and correct all safety hazards on May 16, 17, & 18, 1960. He noted that "Radiation tests were not made at this time as the radiation hazards in open pits in this area have been proven to be negligible as reported in the previous inspection reports."


0
SCALE
100m
NORTH
AZ-N-11-3
CP28
CP27
CP29
CP26
= waste rock
= historic trash
= modern trash
= photo

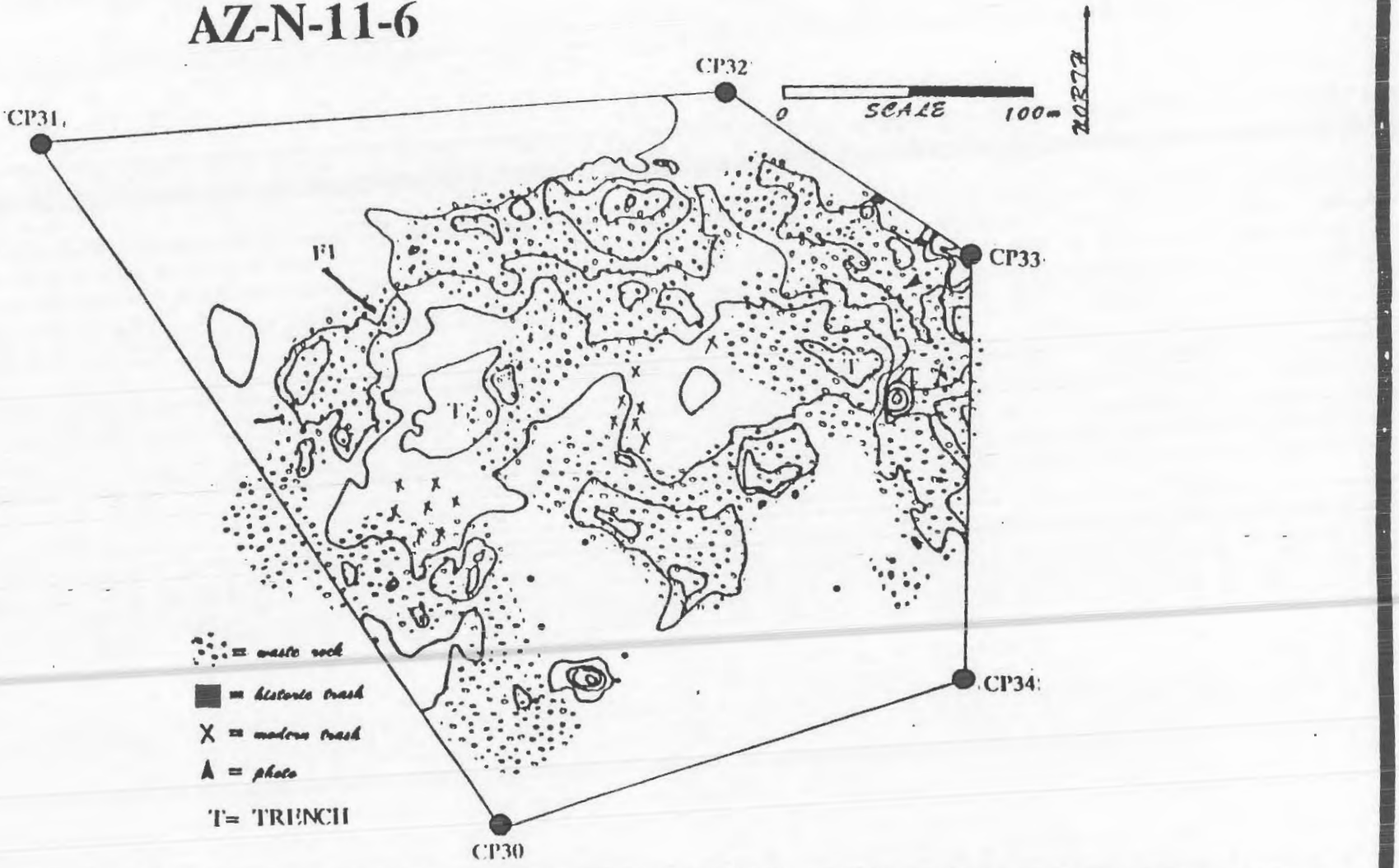
SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): No historical references concerning the Yazzie No. 101 mine were found. However, a total of 4,955 tons of uranium ore were mined during 1956-58 and 1960-61.

AZ-N-11-6


CP32
CP31
CP33
CP34
CP30
F1
T
T
0
SCALE
100m
NORTH
= waste rock
= historic trash
X = modern trash
A = photo
T= TRENCH

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-11-4

FIELD OR OTHER NAME: AMLRD #38, Boyd Tisi No.2

DATE RECORDED: November 21, 1991

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Miranda Warburton, Davina Begaye

USGS 7.5' SERIES MAP REFERENCE: Cameron SE, Arizona 1988

LEGAL LOCATION: T29N, R10E (Projected) Unplatted.

UTM ZONE: 12,
CP35: 3968480N 466720E
CP36: 3968580N 466570E
CP37: 3968720N 466760E
CP38: 3968700N 466840E

STATE: Arizona

COUNTY: Coconino

CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands north of the Little Colorado River

DRAINAGE: An unnamed ephemeral stream flows along the northern border of site.

ELEVATION (FT/M): 4,162 ft. (1,268.6m) Slope and Direction: Variable

SOIL TYPE: Residual and fluvial silt and sand

OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Prickly Pear, Camel Thorn, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo

SITE TYPE: Uranium open pit mines

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s

HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w): ca.235m N-S x 201.9m E-W

Total Area (sq. m): 47,547.5 sq m

How Determined: Compass and metric tape

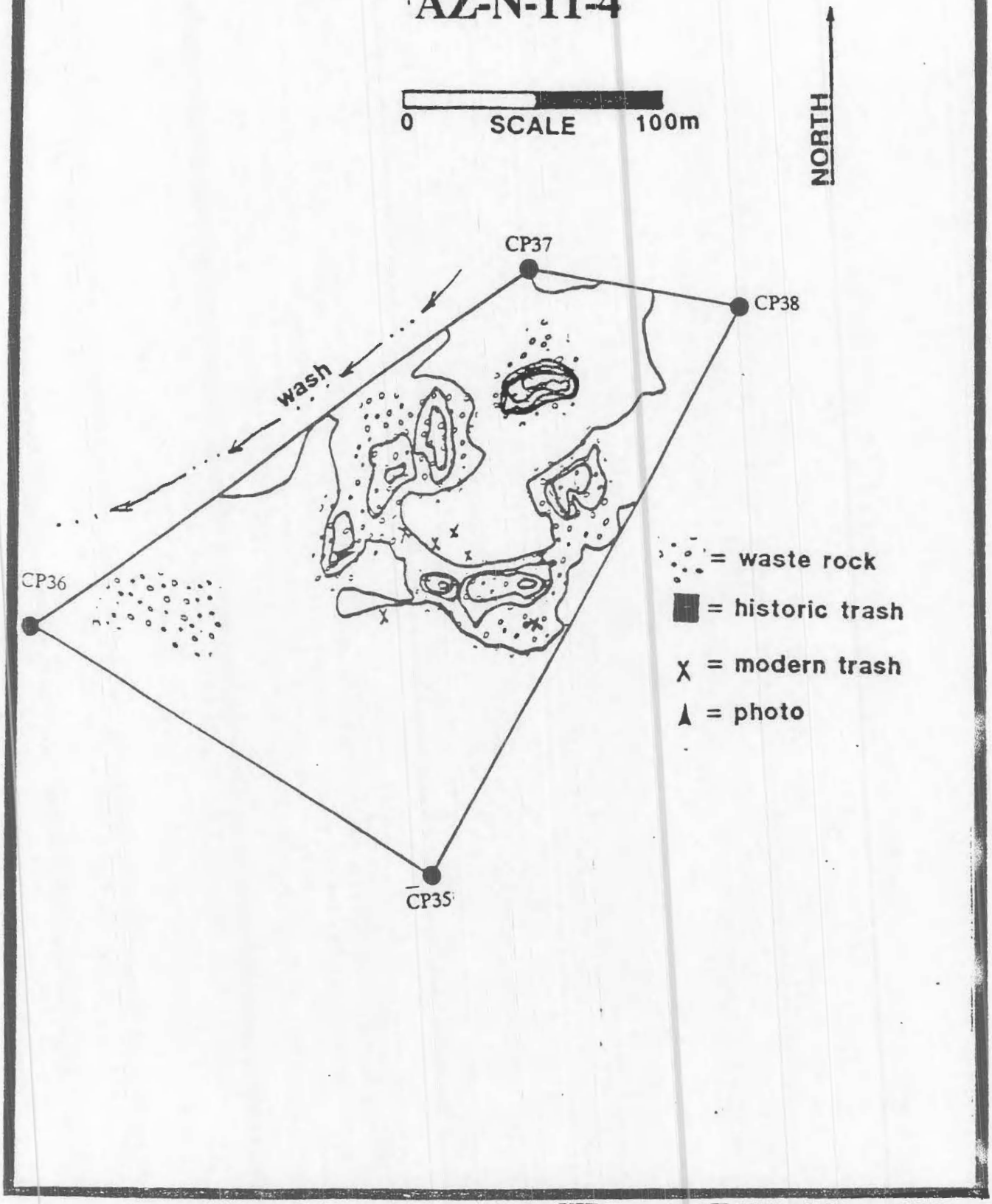
ARCHITECTURE PRESENT? Describe: None.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Historical information is scarce but, this particular mine produced 794 tons of uranium ore in 1957-58. Also, a survey was conducted by the Bureau of Land Management entitled "Report on the Cameron Open Pit Uranium Mines." The Boyd Tisi No. 2 mine was found to measure 30,000 CPS (Counts per second) based on readings taken with a Scintillometer, Geometric Model GR101A in and around the mounds. The overall "Background reading was 20, 000 CPS " at waist height. This is the only reference to AML #38.

AZ-N-11-4


0 SCALE 100m
NORTH
CP37
CP38
CP36
CP35
wash
= waste rock
= historic trash
= modern trash
= photo

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-11-5

FIELD OR OTHER NAME: AMLRD #39, Juan Horse No.3

DATE RECORDED: November 21, 1991

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Miranda Warburton, Davina Begaye

USGS 7.5' SERIES MAP REFERENCE: Cameron SE, Arizona 1988

LEGAL LOCATION: T29N, R10E (Projected) Unplatted.

UTM ZONE: 12,
CP39: 3968300N 467000E
CP40: 3968480N 466760E
CP41: 3968700N 466860E
CP42: 3968470N 467100E

STATE: Arizona

COUNTY: Coconino

CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility

Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands north of the Little Colorado River

DRAINAGE: Unnamed ephemeral stream along south border of site

ELEVATION (FT/M): 4,135 (1,260.3m)

Slope and Direction: Variable

SOIL TYPE: Residual and fluvial silt and sand.

OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Prickly Pear, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo

SITE TYPE: Uranium open pit mine

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s

HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w): ca. 317.9m NW-SE x 249.7m NE-SW

Total Area (sq. m): 79,379.6 sq m

How Determined: Compass and metric tape

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description" below.

COLLECTION MADE?	OF WHAT?	METHOD:
No	N/A	N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION: This site consists of a 50 ft (15.24m) deep tad-pole shaped mine pit that is 745 ft (227m) long and 193.7 ft (59m) at its' widest. The pit contains low piles of waste rock and/or protore along the northern and eastern border and part of the southern border. These low piles reach 8 ft (2.5m) in height at their highest. Water enters this pit to the east or at the tail of the tadpole and drains into the pit. Tamarisk grows within the pit and hoofprints indicate its' use as a water hole by local livestock at certain times of the year.

Historic trash associated with the mine and modern trash are to be found both in and around this pit. This mine pit contained four features (F1,F2, and F3), consisting of historic debris. The first, second, and third features served most likely as lunch areas for the uranium miners, as no oil cans, filters, or machinery parts were encountered. F1, measures 2m E-W x 5m N-S and consists of a church key opened food can and a dense scatter of green and clear glass shards. The second, F2, measures 7m E-W x 5m N-S. A scatter of 50+ church key opened food/juice cans and one Budweiser beer can were inventoried. F3 measures a 2m NW-SE x 10m NE-SW and consists of a scatter of metal can pieces, several slabs of thick metal (painted yellow), 15+ pencil sized metal rods, and several pieces of burnt/melted globs of metal. The last feature, F4, consist only of 10+ food cans in a roughly circular shape (2m diameter). Other historic trash inventoried were as followed: two 5 gal. gas cans, a 1 gal. gas can, lighter fluid, 2 coffee cans, 5+ commodity food cans, a piece of winch wire, a round 15 cm in diameter and 2 cm thick metal tube, tire tubing and a piece of tire. The modern trash was most likely blown in from a nearby residence. Empty plastic bottles and pieces of cardboard lay inside of the pit. A single beer can was the only other modern trash observed.

CONDITION OF SITE: Poor Causes of disturbance: Erosion and littering

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

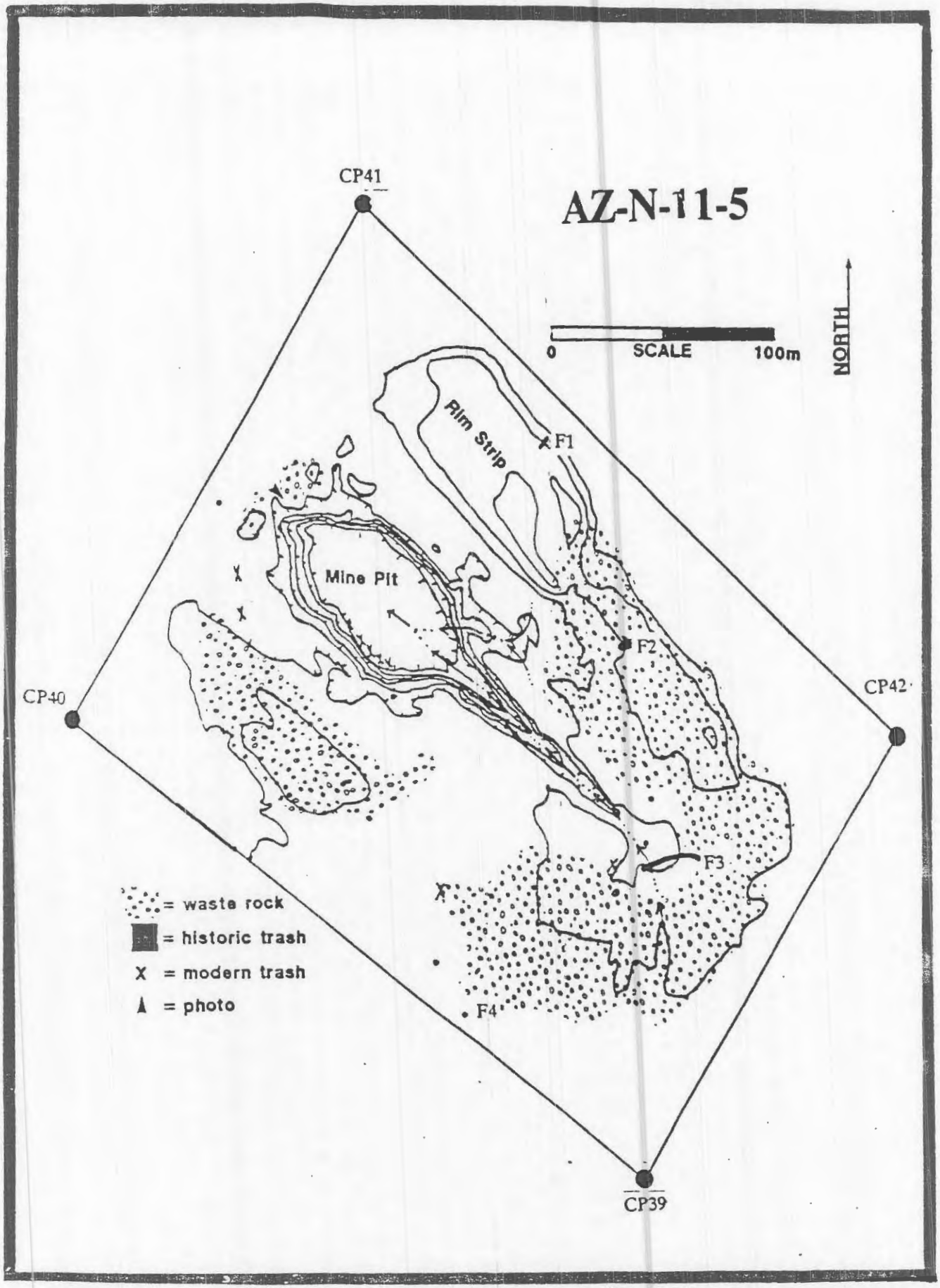
SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Historical information for Juan Horse No.3 is abundant. It was mined by Wells Cargo Inc. and produced 2,343 tons of uranium ore between 1958-59. Apparently, this particular mine often flooded during heavy rains, thus, causing an interference and delay in uranium mining, as stated in the report submitted by Chase McDonnell on December 7, 1959 report. Another report dated September 10 for the time period of July 30-August 1, 1959 reveals that only 24 men were employed by the Cameron Mining Company.

Fred Dernlisy, Paul J. Buff, and Moon Hum on May 9, 1985 took readings off a Scintillometer and determined that this mine read 30,000 CPS or lower. and that "Gamma radiation measurements ranged from 10-100 micro R/hr."


AZ-N-11-5
CP41
CP40
CP42
CP39
0
SCALE
100m
NORTH
Rim Strip
F1
F2
F3
F4
Mine Pit
= waste rock
= historic trash
X = modern trash
= photo

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.:	FIELD OR OTHER NAME:	DATE RECORDED:
AZ-N-12-8	AMLRD #49 (Locus A, Locus B, Locus C, and Locus D), Charles Huskon No.3	December 17, 1991, January 22, 1992

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Davina Begaye, Nathan Lefthand

USGS 7.5' SERIES MAP REFERENCE: A=Cameron South, Arizona 1988
B=Cameron SE, Arizona 1988
C=Cameron SE, Arizona 1988
D=Cameron SE, Arizona 1988

LEGAL LOCATION: A=T28N, R9E/R10E (Projected) Unplatted
B=T28N, R10E (Projected) Unplatted
C=T28N, R10E (Projected) Unplatted
D=T28N, R10E (Projected) Unplatted

UTM ZONE: 12,

Mine Pit A:
CP43: 3963780N 465890E
CP44: 3963880N 465860E
CP45: 3964180N 465880E
CP46: 3964170N 466090E
CP47: 3963760N 466060E

Mine Pit B:
CP48: 3963740N 466260E
CP49: 3963800N 466250E
CP50: 3963880N 466240E
CP51: 3963940N 466340E
CP52: 3963800N 466420E

Mine Pit C:
CP53: 3963520N 466250E
CP54: 3963380N 466220E
CP55: 3963680N 466320E
CP56: 3963570N 466340E

Mine Pit D:
CP57: 3963800N 466660E
CP58: 3964320N 466820E
CP59: 3964390N 467100E
CP60: 3964170N 467280E
CP61: 3963960N 467060E

STATE: Arizona COUNTY: Coconino CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands south of the LIttle Colorado River

CONDITION OF SITE: Poor Causes of disturbance: Erosion

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

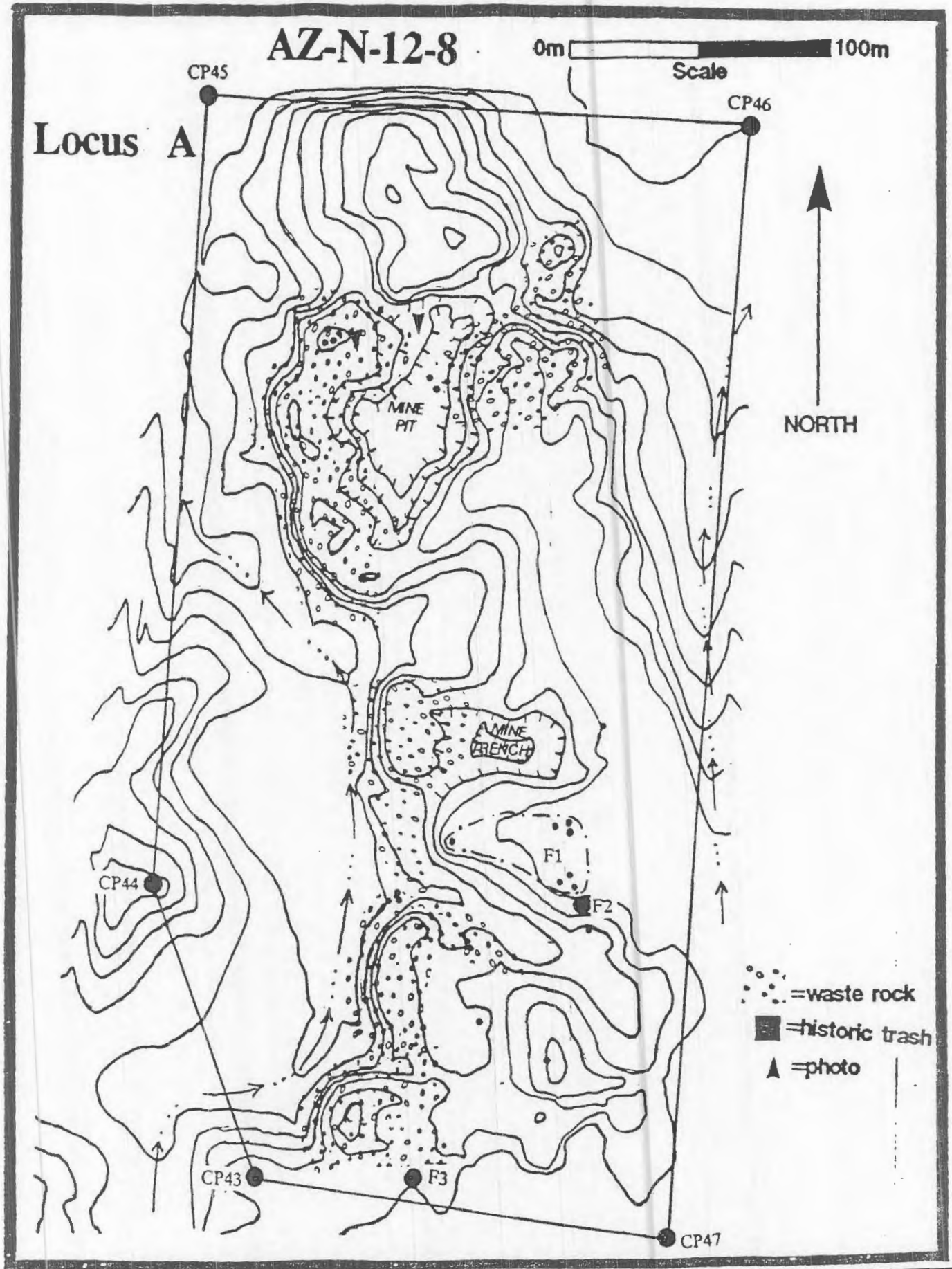
SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

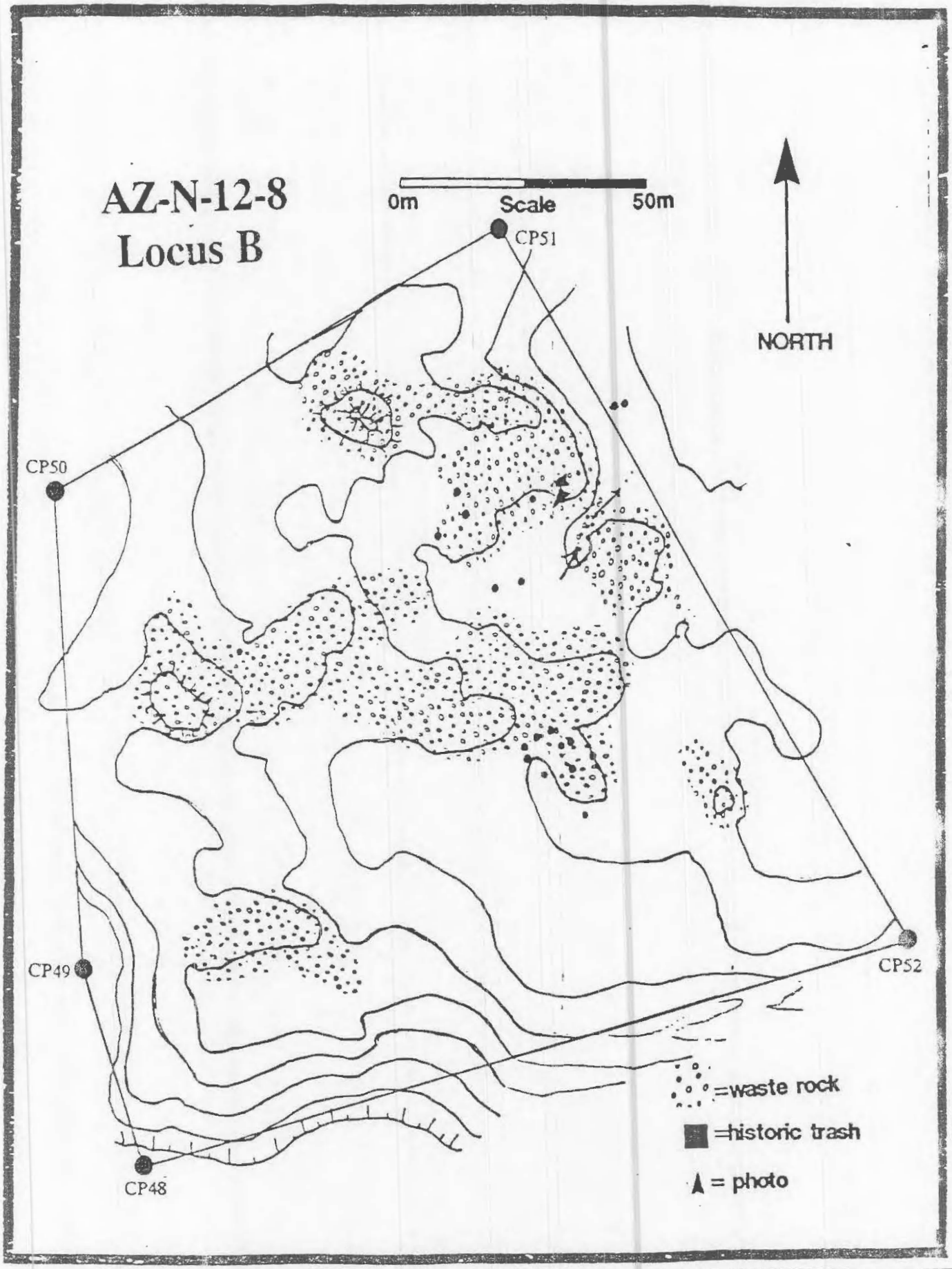
SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

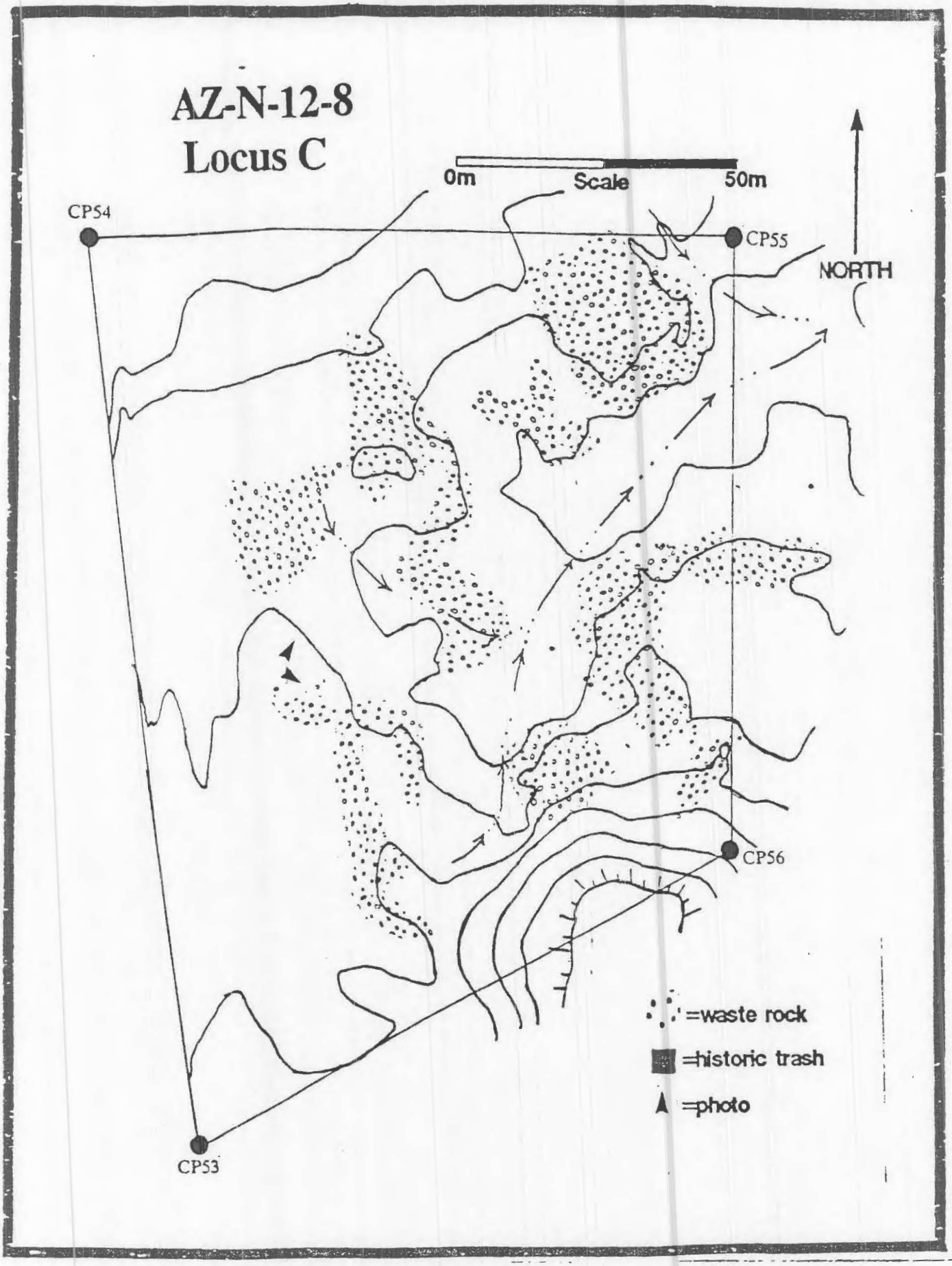
PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Charles Huskon No. 3 was operated by Rare Metals Corporation and produced 27, 249 tons of uranium ore during 1953-1961. A total of fourteen reports were written on the Charles Huskon No. 1 mine by the USGS Branch of Mines, almost all of which were written by Chas M. McConnell. A report dating May 28, 1958 explains that only three mines are in operation at this point with a fourth beginning to be developed. Radon daughters and gamma rays were reportedly below work level in the August 18, 1959 report. The August 21st, 1959 report states that "the mine operating department of Rare Metals terminated their operation in the Cameron area. Mines...have been turned over to Cameron Mining Company for operations by a working agreement." At this point 24 men were involved with mining and all but four of them were Navajo. The 20 Navajo crew workers had made no improvement in wearing hard toed shoes, "which were furnished at cost by the operator," in the report dated December 3, 1959. The crew of 20 Navajo men were reduced by 5 in a report dated March 16, 1960. The last report on this mine was written on September 6, 1962, and no comment was made about Charles Huskon No. 3.

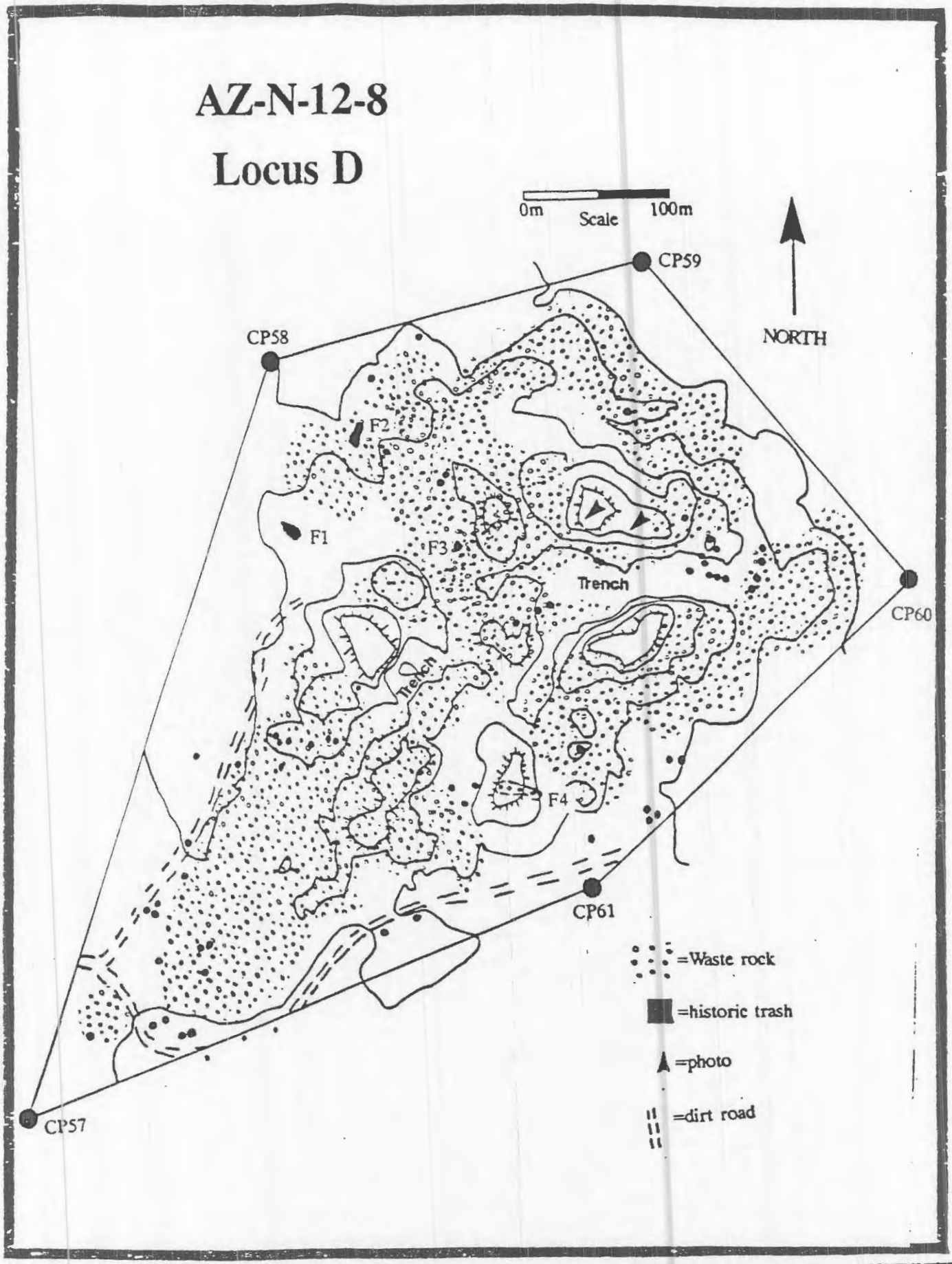

AZ-N-12-8
0m
100m
Scale
Locus A
CP45
CP46
NORTH
MINE PIT
MINE TRENCH
F1
F2
CP44
CP43
F3
CP47
=waste rock
=historic trash
=photo


AZ-N-12-8
Locus B
0m
Scale
50m
NORTH
CP51
CP50
CP49
CP52
CP48
=waste rock
=historic trash
= photo


AZ-N-12-8
Locus C
0m
Scale
50m
NORTH
CP54
CP55
CP56
CP53
=waste rock
=historic trash
=photo

AZ-N-12-8

Locus D



NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-11-9

FIELD OR OTHER NAME: AMLRD #53, Charles Huskon No.7

DATE RECORDED: November 13th, 1991

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU

ARCHAEOLOGIST(S): Miranda Warburton, Davina Begaye

USGS 7.5' SERIES MAP REFERENCE: Cameron SE, Arizona 1988

LEGAL LOCATION: SEC. 20, T28N R10E, SW1/4, NW1/4, NW1/4

UTM ZONE: 12,
CP62: 3961180N 467540E
CP63: 3961360N 467550E
CP64: 3961460N 467580E
CP65: 3961430N 467680E
CP66: 3961280N 467710E
CP67: 3961170N 467700E

STATE: Arizona

COUNTY: Coconino

CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility. Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands south of the LIttle Colorado River.

DRAINAGE: Unnamed ephermeral stream 140m north

ELEVATION (FT/M): 4,303ft (1,311.6m)

Slope and Direction: Variable

SOIL TYPE: Residual and fluvial silt and sand.overlain with Tolchaco gravels.

OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Prickly Pear, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo

SITE TYPE: Uranium open pit mines

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s

HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w): ca. 270.7m N-S x 175.9m E-W

Total Area (sq. m): 47,616.13 sq m

How Determined: Compass and metric tape

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description" below.

COLLECTION MADE? No OF WHAT? N/A METHOD: N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION: At AMLRD #53 an actual mining pit is absent. Instead hills of the Chinle formation were probably plowed into with heavy machinery. The waste rock and/or protore one observes is more than likely runoff from the bottom southeastern corner of this site, the place of considerable blading and leveling. This particular area is continued in AMLRD #54, which is located just south this mine site. The waste rock and/or protore spreads along drainages and ultimately to several unnamed ephemeral streams, which drain north into the Little Colorado River.

The trash observed was mostly historic in nature and few and far between. Debris consisted of a hollow metal rod with one solid end, a rusted "Igloo" 5 gal. water container, several wooden stakes, a piece of winch wire protruding from an embankment, and a 1 gal. rusted gas can. Modern trash was absent, since this area is fairly isolated.

CONDITION OF SITE: Poor Causes of disturbance: Erosion.

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

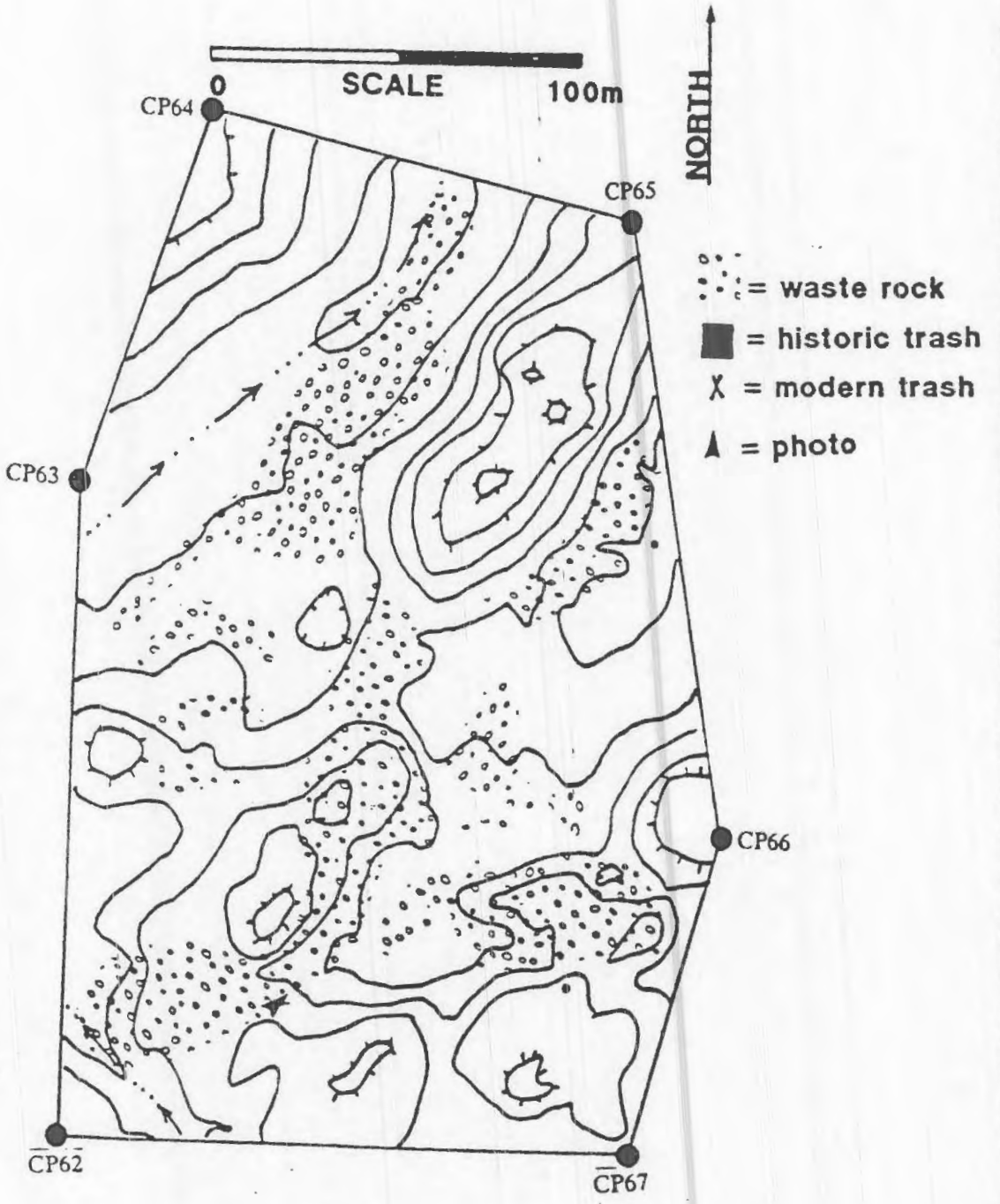
HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): This mine was operated by the Rare Metals Corporation and produced 2,501 tons of uranium ore in 1953 and 1956-58. Chas McConnell in a report dated April 9, 1958 for the period of March 8-11, 1958 reported the following:

> A strip pit 100 feet wide by 200 feet thick had been opened on the claim. The overburden varied from a few feet up to 20 feet thick and the ore bed varied in thickness. All known ore had been recovered from the claim.

This is the only reference available.

AZ-N-11-9


0
SCALE
100m
NORTH
CP64
CP65
CP63
CP66
CP62
CP67
= waste rock
= historic trash
= modern trash
= photo

NAVAJO NATION ARCHAEOLOGY DEPARTMENT

Site Survey and Management Form

SITE NO.: AZ-N-11-10 FIELD OR OTHER NAME: AMLRD #54, Yazzie, No.102 DATE RECORDED: November 13th, 1991

PROJECT NUMBER & NAME: NNAD-91-375, An Archaeological Survey for the Proposed Reclamation of 11 Abandoned Uranium Mines in Cameron, Coconino County, Arizona.

ORGANIZATION: NNAD-NAU ARCHAEOLOGIST(S): Miranda Warburton, Davina Begaye

USGS 7.5' SERIES MAP REFERENCE: Cameron SE, Arizona 1988

LEGAL LOCATION: Sec. 19, T28N R10E, NE 1/4, SE 1/4, NE 1/4

UTM ZONE: 12,
CP68: 3961000N 467450E
CP69: 3961200N 467470E
CP70: 3961150N 467600E
CP71: 3961100N 467600E
CP72: 3961040N 467580E

STATE: Arizona COUNTY: Coconino CHAPTER: Cameron

LAND STATUS: Navajo Tribal Trust

GROUND VISIBILITY: 90-100% visibility Kind and extent of cover? Low shrubs and grass

TOPOGRAPHY: Flat desert grasslands south of the LIttle Colorado River

DRAINAGE: Unnamed ephemeral stream 500m north

ELEVATION (FT/M): 4,303ft (1,311.6m) Slope and Direction: Variable

SOIL TYPE: Residual and fluvial silt and sand overlain with Tolchaco gravels. OTHER: N/A

VEGETATION PRESENT: Tamarisk, 4-Wing Salt Brush, Prickly Pear, Russian Thistle, and Various Grasses

CULTURAL AFFILIATION(S): Anglo SITE TYPE: Uranium open pit mine

PERIOD(S) OF OCCUPATION (Date, if known): 1950s-1960s HOW DATED?: Historic records

DIMENSIONS OF SITE (l x w): ca. 191.7m N-S x 163.7m E-W Total Area (sq. m): 31,381.3 sq m

How Determined: Compass and metric tape

ARCHITECTURE PRESENT? Describe: None.

ARTIFACTS OBSERVED/COUNTED: See "Site Description" below.

COLLECTION MADE? No OF WHAT? N/A METHOD: N/A

PHOTO TAKEN?	B/W:	Frame(s)	Color:	Roll	Frame(s)
Yes	N/A	N/A	Yes	Undeveloped	N/A

SITE DESCRIPTION: This site consists of a mine pit that is 120m long and 52m wide. Most of the waste rock was dumped in piles east of the pit that covers an area roughly 80m x 60m in size and reaches a height of 1.5m in height. Water collects in this mine pit at certain times of the year.

The historic trash scatter includes one feature and a scattering of debris. The historic feature recorded, F1, consisted of 4 rusted cans, a recent 1 gal. gas can, a rusted oil can, a church key opened soda can, and a "Dupont" 1 gal. cylindrical can. The remaining historical trash inventoried includes: 3+ oil cans ("Dupont" and "Mobile"), 2+ small pieces of milled lumber, a wooden stake, a wooden sign post, a 16" six sided piece of drill rod, 2+ pieces of metal, 7+ rusted food cans, and a whole glass bottle ("One Way Beverages"). All of the trash encountered was scattered around the mine pit except for the whole glass bottle, which was located on a Chinle formation hill northeast of the mine pit.

CONDITION OF SITE: Poor Causes of disturbance: Erosion.

LOCATION OF SITE RELATIVE TO PROJECT AREA: Site is the project area.

EXTENT OF INVESTIGATION TO DATE: This report

RESEARCH POTENTIAL: None

RECOMMENDATIONS: Since this site is not Register Eligible, we recommend that AMLRD proceed with their reclamation as planned.

SITE ASSESSMENT UNDER 36 CFR 60.4 (National Register):

INTEGRITY: Site contains integrity of location.

and CRITERIA a-d: Site does not qualify under Criteria a-d and is not eligible for nomination to the National Register, as it lacks scientific research potential. Further investigation is unlikely to yield information important in local history.

EXCLUSIONS: Site is less than 50 years old.

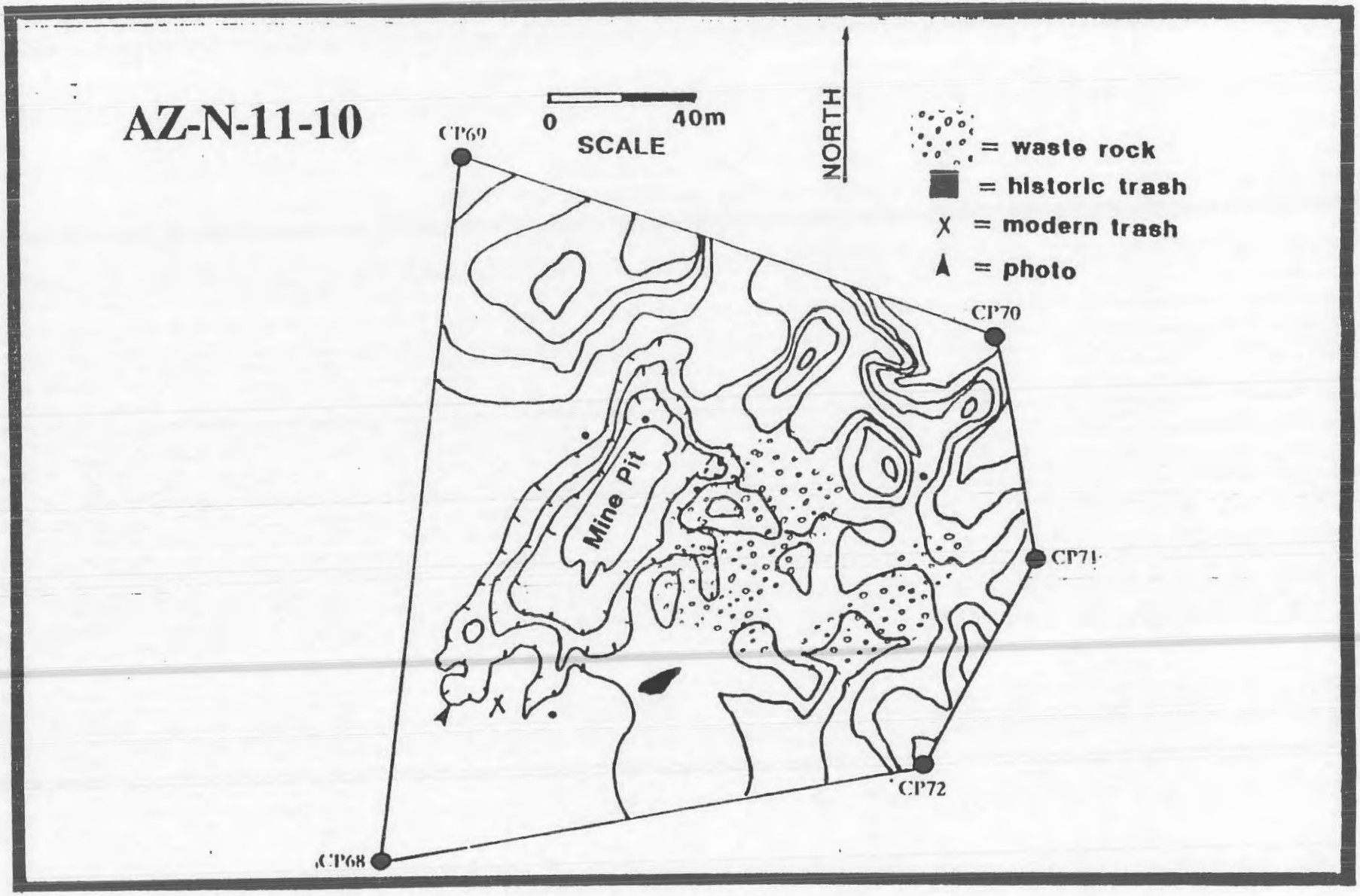
SITE ASSESSMENT UNDER 43 CFR 7.3. (Archaeological Resources Protection Act: Site is less than 100 years old and lacks scientific research potential, thus it is not protected under ARPA.

SITE ASSESSMENT UNDER AIRFA (American Indian Religious Freedom Act): Site has no religious significance to extant Native Americans, thus does not merit protection under AIRFA.

PROVIDE A SITE MAP (including site designation, North arrow, scale, recognizable features, landmarks and relationship to project area).

HOW CAN THE SITE BE REACHED? (See attached U.S.G.S map)

OTHER COMMENTS (Ethnographic Data, etc): Yazzie No. 102 was mined by Chessher and Company and produced 1,610 tons of uranium ore during 1956-57 and 1960-61.


AZ-N-11-10
0
40m
SCALE
NORTH
= waste rock
= historic trash
= modern trash
= photo
CP69
CP70
CP71
CP72
CP68
Mine Pit